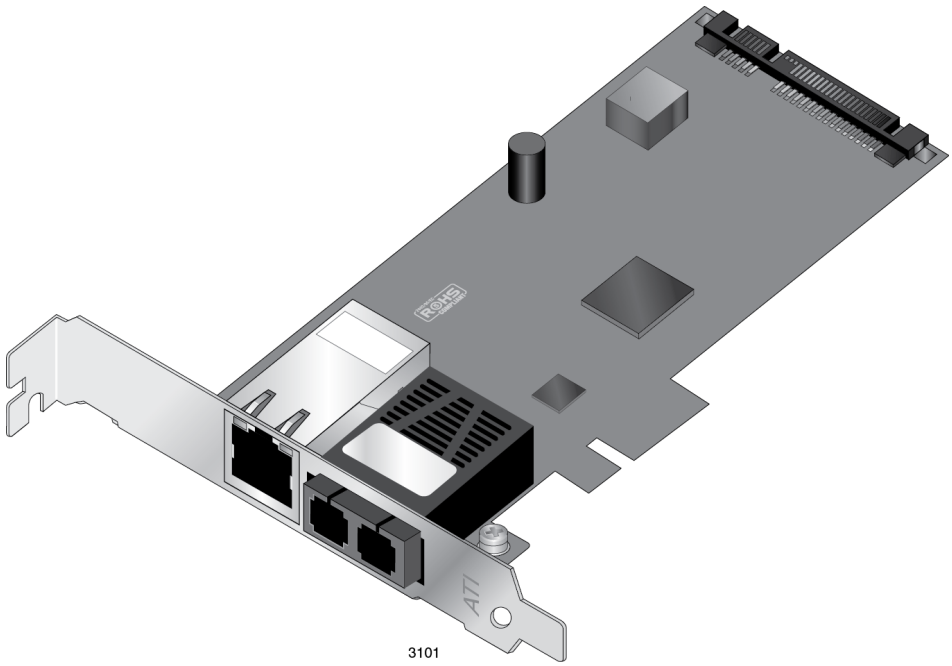
AT-2911GP Network Adapters

Gigabit Fiber Ethernet PoE+ Adapters

- AT-2911GP/SXLC
- AT-2911GP/SXSC
- AT-2911GP/LXLC
- AT-2911GP/LXSC



Installation and User's Guide

613-001872 Rev. A

Copyright © 2013 Allied Telesis, Inc.

All rights reserved. No part of this publication may be reproduced without prior written permission from Allied Telesis, Inc.

Microsoft and Internet Explorer are registered trademarks of Microsoft Corporation. Netscape Navigator is a registered trademark of Netscape Communications Corporation. All other product names, company names, logos or other designations mentioned herein are trademarks or registered trademarks of their respective owners.

Allied Telesis, Inc. reserves the right to make changes in specifications and other information contained in this document without prior written notice. The information provided herein is subject to change without notice. In no event shall Allied Telesis, Inc. be liable for any incidental, special, indirect, or consequential damages whatsoever, including but not limited to lost profits, arising out of or related to this manual or the information contained herein, even if Allied Telesis, Inc. has been advised of, known, or should have known, the possibility of such damages.

Electrical Safety and Emissions Standards

This product meets the following standards:

U.S. Federal Communications Commission
Declaration of Conformity Manufacturer Name: Allied Telesis, Inc. Declares that the product: **Gigabit Fiber Ethernet PoE+ Adapter** **Model Numbers: AT-2911GP/SXLC, AT-2911GP/SXSC, AT-2911GP/LXLC, AT-2911GP/LXSC** This product complies with FCC Part 15B, Class B Limits: This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device must not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. **Radiated Energy** Note: This equipment has been tested and found to comply with the limits for a Class B digital device pursuant to Part 15 of FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with instructions, may cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on. The user is encouraged to try to correct the interference by one or more of the following measures: - Reorient or relocate the receiving antenna. - Increase the separation between the equipment and the receiver. - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected. - Consult the dealer or an experienced radio/TV technician for help. Changes and modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commission rules.

Industry Canada
This Class B digital apparatus complies with Canadian ICES-003. Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment
This Allied Telesis RoHS-compliant product conforms to the European Union Restriction of the Use of Certain Hazardous Substances (RoHS) in Electrical and Electronic Equipment. Allied Telesis ensures RoHS conformance by requiring supplier Declarations of Conformity, monitoring incoming materials, and maintaining manufacturing process controls.

RFI Emissions	FCC Class B, EN55022 Class B, VCCI Class B, C-TICK, CE
Immunity	EN55024 Class B
Electrical Safety	EN60950-1 (TUV), UL 60950-1 ($_{C}UL_{US}$)
Laser Safety	EN60825

Translated Safety Statements

Important: The ☞ indicates that a translation of the safety statement is available in a PDF document titled “Translated Safety Statements” posted on the Allied Telesis website at: www.alliedtelesis.com/support/.

Contents

Preface 9
Safety Symbols Used in this Document 10
Contacting Allied Telesis 11

Chapter 1: Introduction 13
Description 14
AT-2911GP Models 14
PoE+ Capable 14
Dual Port Adapter 15
Bridge to Connect Two Ports to One Network 15
SC Fiber Optic Adapter 16
LC Fiber Optic Adapter 16
Twisted Pair Copper Port 16
LED 17
Model Naming Conventions 18
Supported Operating Systems 19
Dual Port Adapter 19
Bridge to Connect Two Ports to One Network 19
Accessing Documents 20
Allied Telesis Documents 20
Contents of Your Shipment 21
Warranty Registration 22

Chapter 2: Installing the Hardware 23
System Requirements 24
Reviewing Safety Precautions 25
Pre-Installation Checklist 27
Replacing the Bracket 28
Installing a Network Adapter Card 30
Connecting the Network Cables 34
Connecting a Fiber Optic Network Cable 34
Connecting a Twisted-Pair Copper Cable 34

Chapter 3: Installing the Driver Software 35
Overview 36
Guidelines 36
Installing the Driver Using Device Manager 36
Installing the Driver Using the Silent Installation Method 36
Downloading the Driver Software 37
Accessing the Device Manager 39
Accessing Device Manager on Windows Server 2012 or Windows 8 39
Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7 41
Accessing Device Manager on Windows Server 2003 or Windows XP 42
Installing the Driver Software 45
Installing the Driver Software on Windows Server 2012 or Windows 8 45
Installing the Driver Software on Windows Server 2008, Windows Vista, or Windows 7 48
Installing the Driver Software on Windows Server 2003 or Windows XP 51
Updating the Driver Software 55
Updating the Driver on Windows Server 2012 or Windows 8 55
Updating the Driver on Windows Server 2008, Windows Vista, or Windows 7 57
Updating the Driver on Windows Server 2003 or Windows XP 58

Performing the Silent Installation 60
Installing the Driver Silently 60
Viewing Supported DPInst Options 61

Chapter 4: Installing the AT-MUX Utility 63
Overview 64
Supported Operating Systems 64
Guidelines 64
Using the AT-MUX Utility 64
Downloading the AT-MUX Utility Setup File 65
Installing the AT-MUX Utility 67
Accessing the AT-MUX Utility 69
Uninstalling the AT-MUX Utility 72

Chapter 5: Configuring a VoIP Phone System 75
Overview 76
Configuring VLAN Tagging on Adapter Ports 77
VLAN Tagging Combinations 77
Using VLAN-Capable VoIP Phones 78
Using VLAN-Incapable VoIP Phones 78
Other Combinations 78

Chapter 6: Modifying Advanced Properties 79
Overview 81
Guidelines 81
Supported Advanced Properties 82
Windows XP and Server 2003 82
Windows Vista and Server 2008 82
Windows 7 and Server 2008 R2 84
Windows 8 and Server 2012 85
Accessing Advanced Properties 87
802.1p QOS 89
802.3az EEE 90
ARP Offload 91
Checksum Offload 92
EEE Control Policies 94
Ethernet@WireSpeed 96
Flow Control 97
Interrupt Moderation 99
IPv4 Checksum Offload 100
Jumbo Mtu 101
Large Send Offload 102
Large Send Offload (IPv4) 103
Large Send Offload v2 (IPv4) 105
Large Send Offload v2 (IPv6) 107
Locally Administered Address 108
Guidelines for Assigning a Locally Administered Address 108
Assigning the Locally Administered Address 108
Network Address 110
NS Offload 112
Priority & VLAN 113
Receive Buffers 115
Receive Side Scaling 116
Maximum Number of RSS Queues 117
RSS Queues 118
Speed & Duplex 119
TCP/UDP Checksum Offload (IPv4) 120
TCP/UDP Checksum Offload (IPv6) 122
Transmit Buffers 124
Virtual Machine Queues 125
VLAN ID 126

VMQ VLAN Filtering 127
Wake Up Capabilities 128
Wake on Magic Packet 130
Wake on Pattern Match 131
WOL Speed 132

Chapter 7: Uninstalling the Driver Software 133
Overview 134
    Guidelines 134
Uninstalling the Driver Software Using Device Manager 135
Uninstalling the Driver Software Silently 137

Chapter 8: Troubleshooting 139
Checking the Port LED on the Adapter 140
Troubleshooting Checklist 141
Testing Network Connectivity 142
    Windows 142
    Linux 143

Appendix A: Specifications 145
Physical Specifications 145
Environmental Specifications 145
Power Specifications 145
Optical Specifications 145
    SX 145
    LX 145

Appendix B: Cleaning Fiber Optic Connectors 147
Overview 148
    Guidelines 148
Cleaning Using a Cartridge-Type Cleaner 149
Cleaning Using a Swab 151

Preface

This manual is the installation and user's guide for the AT-2911GP Gigabit Fiber Ethernet PoE+ Adapter cards. The adapter cards included in this series are:

- AT-2911GP/SXLC
- AT-2911GP/SXSC
- AT-2911GP/LXLC
- AT-2911GP/LXSC

The Preface contains the following sections:

- "Safety Symbols Used in this Document" on page 10
- "Contacting Allied Telesis" on page 11

Safety Symbols Used in this Document

This document uses the following conventions:

Note
Notes provide additional information.

Caution
Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.

Warning
Warnings inform you that performing or omitting a specific action may result in bodily injury.

Warning
Warnings inform you that an eye and skin hazard exists due to the presence of a Class 1 laser device.

Contacting Allied Telesis

If you need assistance with this product, you may contact Allied Telesis technical support by going to the Support & Services section of the Allied Telesis web site at **www.alliedtelesis.com/support**. You can find links for the following services on this page:

- 24/7 Online Support - Enter our interactive support center to search for answers to your questions in our knowledge database, check support tickets, learn about Return Merchandise Authorization (RMA), and contact Allied Telesis technical experts.
- USA and EMEA phone support - Select the phone number that best fits your location and customer type.
- Hardware warranty information - Learn about Allied Telesis warranties and register your product online.
- Replacement Services - Submit an RMA request via our interactive support center.
- Documentation - View the most recent installation guides, user guides, software release notes, white papers and data sheets for your product.
- Software Updates - Download the latest software releases for your product.

For sales or corporate contact information, go to **www.alliedtelesis.com/purchase** and select your region.

Chapter 1

Introduction

This chapter provides an introduction to the Allied Telesis AT-2911GP Gigabit Fiber Ethernet PoE+ Adapter cards.

This chapter contains the following sections:

- ❒ “Description” on page 14
- ❒ “Model Naming Conventions” on page 18
- ❒ “Supported Operating Systems” on page 19
- ❒ “Accessing Documents” on page 20
- ❒ “Contents of Your Shipment” on page 21
- ❒ “Warranty Registration” on page 22

Description

The AT-2911GP adapter is a Gigabit Ethernet PCI Express (PCIe) card developed based on Broadcom's BCM5718 Ethernet controller. The adapter card is equipped with one 1000SX or 1000LX fiber optic port and one 10/100/1000T Power over Ethernet Plus (PoE+) copper port capable of providing electrical power to Class 4 devices.

The AT-2911GP adapter card can be used as a dual port adapter or a bridge that connects two ports. As a dual port adapter, the adapter card connects the PC to two separate networks. As a bridge, the adapter connects two ports on the card to the same network.

Figure 1 shows the AT-2911GP/LXSC model.

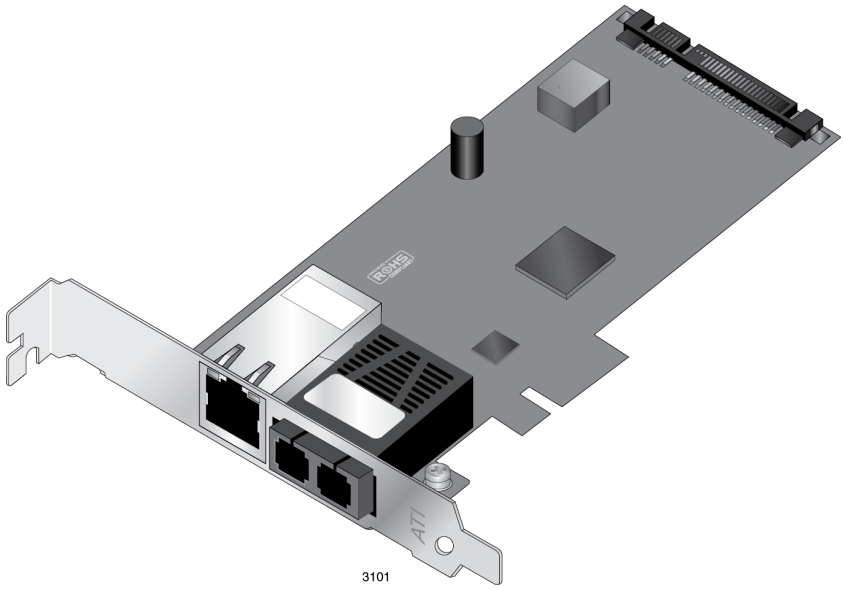


Figure 1. AT-2911GP Adapter Card

AT-2911GP Models

The AT-2911GP series offers the following models:

- AT-2911GP/SXLC
- AT-2911GP/SXSC
- AT-2911GP/LXLC
- AT-2911GP/LXSC

PoE+ Capable

Power over Ethernet (PoE) is a system that supports power along with data using a single Ethernet cable. Class 4 devices require power between 12.95 watts and 25.5 watts. PoE+ is a PoE standard for devices that provide power up to 25.5 watts.

Dual Port Adapter

The AT-2911GP adapter is a dual port adapter to connect a PC to two separate networks. You can assign an IP address to each port.

After you physically install the AT-2911GP adapter on your Windows operating system, you must install driver software. To install driver software, see Chapter 3, “Installing the Driver Software” on page 35.

Note
You do not need to install driver software for Linux system because Linux has inbox drivers for the AT-2911GP adapters.

Bridge to Connect Two Ports to One Network

The AT-2911GP adapter is designed to connect a computer to the Ethernet network using a fiber optic cable and a Powered Device (PD) such as a Voice over IP (VoIP) phone, Wi-Fi access point, or security camera, using a copper cable. In this setting, the adapter functions as a bridge between the fiber port and copper port. Figure 2 on page 15 illustrates an example of a topology with VoIP phones.

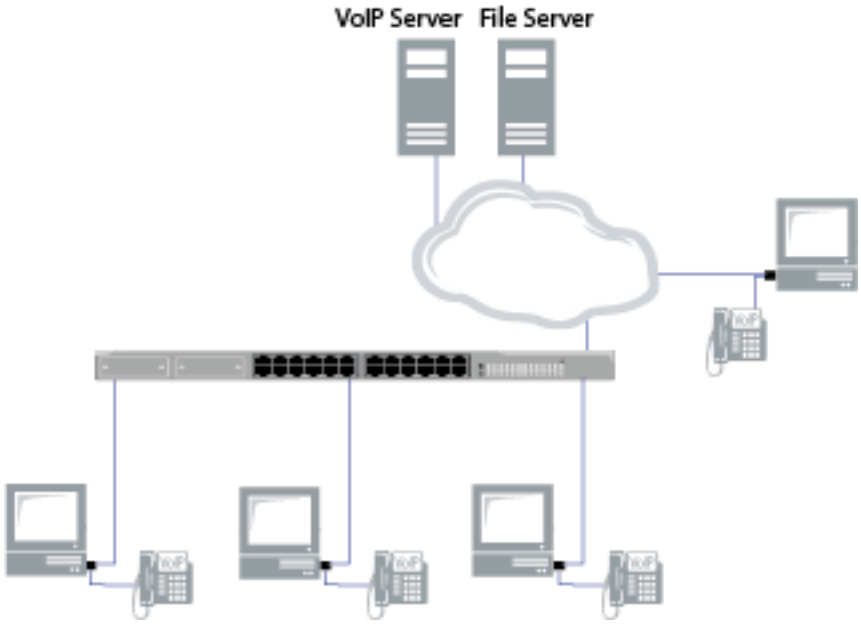


Figure 2. Configuration Example

To use the AT-2911GP adapter to connect a VoIP phone as shown in Figure 2, you must install the AT-MUX utility as well as driver software. The AT-MUX utility bridges frames between the fiber optic port and copper port. To install AT-MUX utility, see Chapter 4, “Installing the AT-MUX Utility” on page 63.

To configure a VoIP phone system as shown in Figure 2, see Chapter 5, “Configuring a VoIP Phone System” on page 75.

SC Fiber Optic Adapter

The AT-2911GP/SXSC and AT-2911GP/LXSC adapter cards are equipped with a 1000BASE-SX or 1000BASE-LX port with the SC adapter.

The SC adapter is shown in Figure 3.

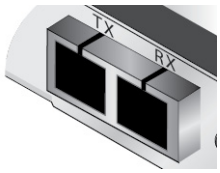


Figure 3. SC Fiber Optic Adapter

To connect the SC adapter to a network cable, you must have a fiber optic network cable with the SC connector.

LC Fiber Optic Adapter

The AT-2911GP/SXLC and AT-2911GP/LXLC adapter cards are equipped with a 1000BASE-SX or 1000BASE-LX port with the LC adapter.

The LC fiber optic adapter is shown in Figure 4.

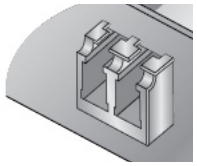


Figure 4. LC Fiber Optic Adapter

Twisted Pair Copper Port

The AT-2911GP adapter card is equipped with a PoE+ copper port for a 10/100/1000BASE-T twisted pair cable.

The twisted pair cable port is shown in Figure 5.

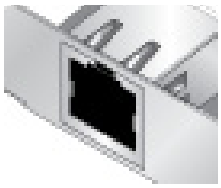


Figure 5. Twisted Pair Cable Port

The pin layout to a port and RJ-45 connector is illustrated in Figure 6.

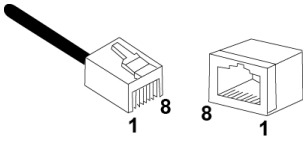


Figure 6. Pin and RJ-45 Connector Pin Layout

LED

The AT-2911GP adapter card comes with two LED's built into the copper port as shown in Figure 7. The LED away from the fiber optic port indicates the link and activity status of the copper port; the LED close to the fiber optic port indicates the link and activity status of the fiber optic port.

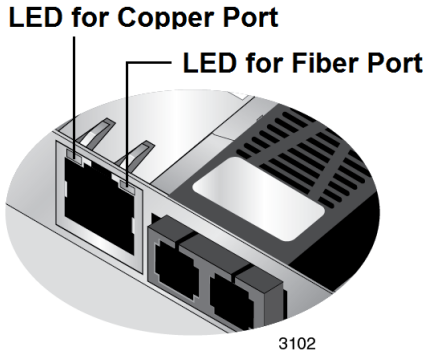


Figure 7. LED's on the Copper Port

Table 1 describes the link states that the LED's indicate.

Table 1. LED Status

State	Description
On	Valid link.
Off	No link.
Flashing	The port is receiving or transmitting network packets.

Model Naming Conventions

The hardware features of the AT-2911GP adapter cards are represented by the letters and numbers in the model names. The conventions for the AT-2911GP adapter cards are identified in Figure 8.

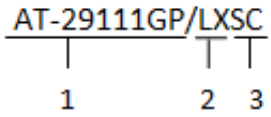


Figure 8. AT-2911GP Model Naming Conventions

The conventions are defined in Table 2.

Table 2. AT-2911GP Model Naming Conventions

Convention	Definition
1	Indicates the product name
2	Identifies the physical layer standard for Gigabit Ethernet transmission. The following is a list of standards: ❒ LX - port of 1000BASE-LX fiber optic cable ❒ SX - port of 1000BASE-SX fiber optic cable
3	Identifies the type of fiber optic connector. The following is a list of connectors: ❒ SC - SC connector ❒ LC - LC connector

Supported Operating Systems

The AT-2911GP adapter card can be used as a dual port adapter or a bridge to connect two ports.

Dual Port Adapter

The following list shows the supported operating systems to use the AT-2911GP adapter card as a dual port adapter:

- Windows 8
- Windows Server 2012
- Windows 7
- Windows Server 2008 R2
- Windows Vista
- Windows Server 2008
- Windows XP
- Windows Server 2003
- Linux

The AT-2911GP adapter uses Linux inbox driver software to operate so that you do not need to install driver software for Linux systems. A driver supplied with an operating system is called an inbox driver.

For Windows Operating Systems, you must install driver software for the AT-2911GP adapter. To install driver software for Windows Operating Systems, see Chapter 3, “Installing the Driver Software” on page 35.

Bridge to Connect Two Ports to One Network

The following list shows the supported operating systems to use the AT-2911GP adapter as a bridge:

- Windows 7
- Windows XP 32-bit

In addition to installing driver software, you must install the AT-MUX utility on your system to function as a bridge. See Chapter 4, “Installing the AT-MUX Utility” on page 63.

Accessing Documents

Documents for AT-2911GP adapter cards are available at Allied Telesis websites.

Allied Telesis Documents

To access documents for AT-2911GP adapter cards, do the following:

1. Open a web browser, such as Internet Explorer or FireFox, on your system and enter the following:

   http://www.alliedtelesis.com/

   The Allied Telesis home page is displayed.

2. Enter "2911GP" in the search box and press the enter key.

3. Click "AT-2911GP" from the search results.

   The AT-2911GP product page is displayed.

4. Click one of the listed documents.

   The content of the document is displayed.

Contents of Your Shipment

The following items are Included with your adapter card:

- Antistatic bag

  The adapter card is shipped in an antistatic bag. It protects the adapter card when stored or shipped. Keep the adapter card in its packaging until ready for installation.

- Standard-profile bracket

  The standard-profile bracket is longer than the low-profile bracket. The AT-2911GP adapter cards are shipped with a low-profile bracket attached.

> **Note**
> The AT-2911GP adapter card is not shipped with a software driver CD. You must download the driver software for Windows from the Allied Telesis website. See Chapter 3, “Downloading the Driver Software” on page 37.

Inform your network equipment supplier of any missing or damaged items. If you need to return the module, you must pack it in the original (or equivalent) packing material or the warranty will be voided. See “Contacting Allied Telesis” on page 11.

Warranty Registration

Allied Telesis hardware products are covered under limited warranties.

All Allied Telesis warranties are subject to and provided only on the terms and conditions set out in the Allied Telesis Limited Warranties listed on the Allied Telesis website at **http://alliedtelesis.com/support/warranty**.

Chapter 2

Installing the Hardware

This chapter contains the following sections:

- “System Requirements” on page 24
- “Reviewing Safety Precautions” on page 25
- “Pre-Installation Checklist” on page 27
- “Replacing the Bracket” on page 28
- “Installing a Network Adapter Card” on page 30
- “Connecting the Network Cables” on page 34

System Requirements

Before installing the AT-2911GP adapter card, make sure your system meets the requirements listed below:

- PC with one of the following operating systems installed:
  - Windows 8
  - Windows Server 2012
  - Windows 7
  - Windows Server 2008 R2
  - Windows Vista
  - Windows Server 2008
  - Windows XP
  - Windows Server 2003
  - Linux
- One open PCIe slot
- 128 MB RAM (minimum)

Reviewing Safety Precautions

Review the following safety precautions before you begin to install an adapter card.

Note
The ✍ indicates that a translation of the safety statement is available in a PDF document titled “Translated Safety Statements” posted on the Allied Telesis website at **www.alliedtelesis.com/support/software/**.

Warning
Do not stare into the laser beam. ✍ L2

Warning
This is a “Class 1 LED product”. ✍ L3

Warning
Do not look directly at the fiber optic cable ends or inspect the cable ends with an optical lens. ✍ L6

Warning
Do not work on this equipment or cables during periods of lightning activity. ✍ E2

Warning
Operating Temperature: This product is designed for a maximum ambient temperature of 40 degrees C. ✍ E7

Note
All Countries: Install this product in accordance with local and National Electric Codes. ✍ E8

Warning

The module is being installed in a system that operates with voltages that can be lethal. Before you remove the cover of your system, you must observe the following precautions to protect yourself and to prevent damage to the system components.

- Remove any metallic objects or jewelry from your hands and wrists.
- Make sure to use only insulated or nonconducting tools.
- Verify that the system is powered OFF and unplugged before accessing internal components.
- Installation or removal of modules must be performed in a static-free environment. The use of a properly grounded wrist strap or other personal antistatic devices and an antistatic mat is strongly recommended. E39

Pre-Installation Checklist

Before installing the AT-2911GP adapter card, check the following list:

1. Check that your computer has an appropriate open PCIe slot.
2. Check that the power supply on your computer has a SATA power connector.
3. Verify that your system is using the latest BIOS.
4. When you download the driver software from the Allied Telesis website, record the path to where the driver file resides on your system.
5. If your system is active, shut it down.
6. When system shutdown is complete, power OFF and unplug your system.
7. Holding the adapter card by the edges, remove it from its shipping package and place it on an antistatic surface.
8. Check the adapter for visible signs of damage, particularly on the card's edge connector.

Caution

Never attempt to install any damaged adapter card. If the adapter card is damaged, report it to Allied Telesis. See "Contacting Allied Telesis" on page 11.

Replacing the Bracket

The AT-2911GP adapter card is shipped with the low-profile bracket attached to the adapter. Depending on your system, you may need to replace the bracket attached to your adapter card.

The following procedure describes how to remove the low-profile bracket from the adapter card and replace it with the standard bracket. You can also use this procedure to remove the standard bracket and replace it with the low-profile bracket.

To replace the low-profile bracket with the standard bracket, perform the following procedure:

1. Remove the screws that attach the bracket to the adapter card. See Figure 9.

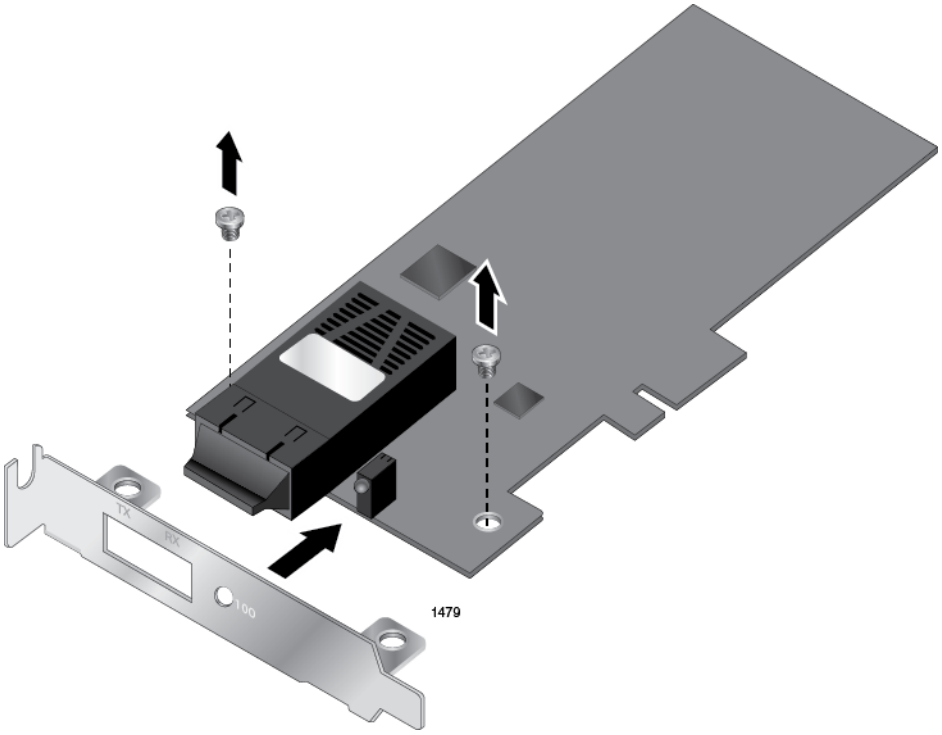


Figure 9. Removing the Low-Profile Bracket

2. Align the tabs of the standard bracket with the holes on the adapter card and fasten the screws onto the adapter card. See Figure 10 on page 29.

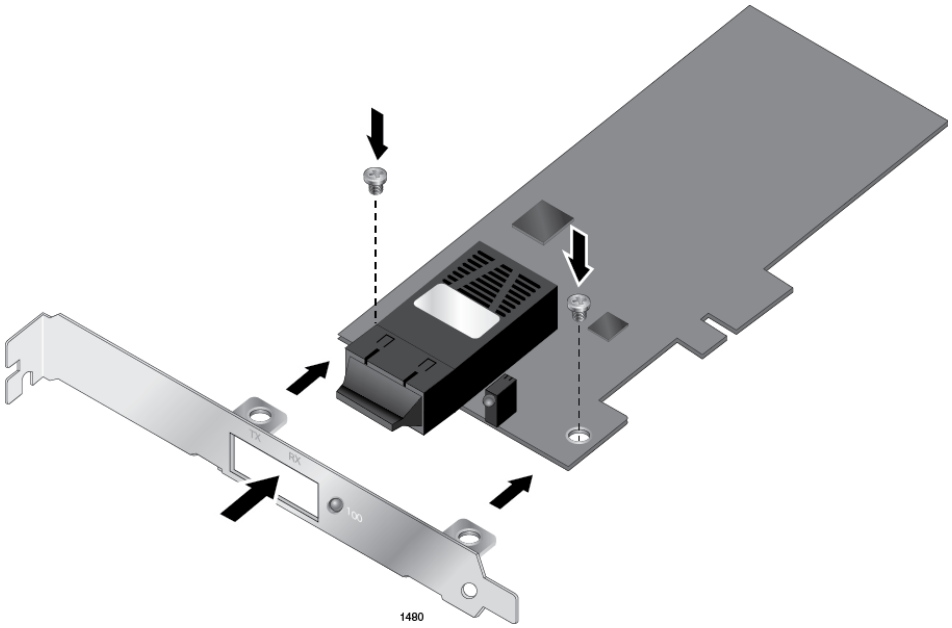


Figure 10. Fastening Screws onto Standard Bracket

Installing a Network Adapter Card

The following instructions apply to installing an AT-2911GP adapter card in most systems. Refer to the manuals that were supplied with your system for details about performing these tasks on your particular system.

To install the network adapter card, perform the following procedure:

1. Review the "Pre-Installation Checklist" on page 27 and "Reviewing Safety Precautions" on page 25.

   Before installing the adapter card, ensure the system power is OFF and unplugged from the power outlet, and that proper electrical grounding procedures have been followed.

Warning
High voltage inside the system presents a safety hazard. Make sure the power is off before removing the cover.

2. Remove the system cover and select any empty PCIe slot. See Figure 11.

   If you do not know how to identify a PCIe slot, refer to your system documentation.

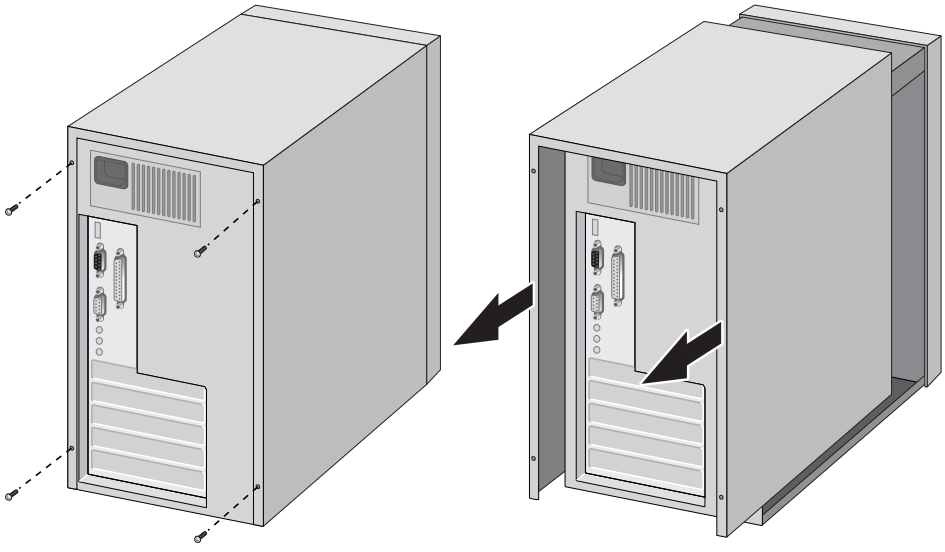


Figure 11. Removing the PC Cover

3. Select an empty, non-shared PCIe slot and remove the faceplate.

   Keep the faceplate in a safe place. You may need it for future use. See Figure 12.

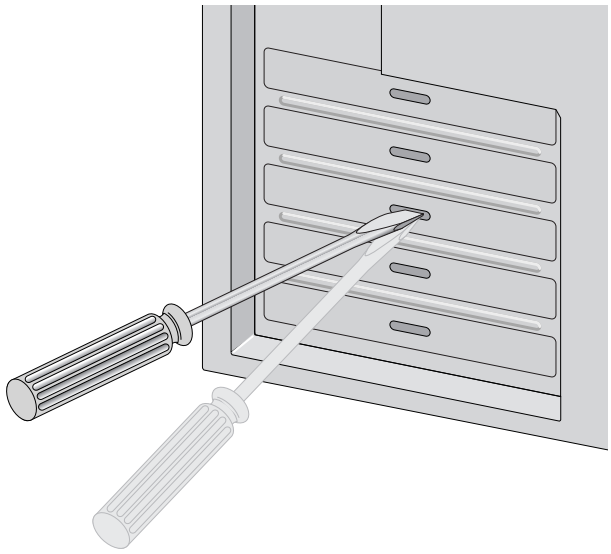


Figure 12. Removing the Faceplate From PCIe Slot

Note
If you cannot locate or know how to find a PCIe slot, refer to the documentation that came with your system.

4. Remove the network adapter card from the shipping package and store the packaging material in a safe location.

Caution
Wear a grounding device and observe electrostatic discharge precautions when installing the network adapter card in a system. Failure to observe this caution could result in damage to the card.

5. Applying even pressure at both corners of the card, push the adapter card until it is firmly seated in the PCIe slot.

   Make sure the card is securely seated. See Figure 13 on page 32.

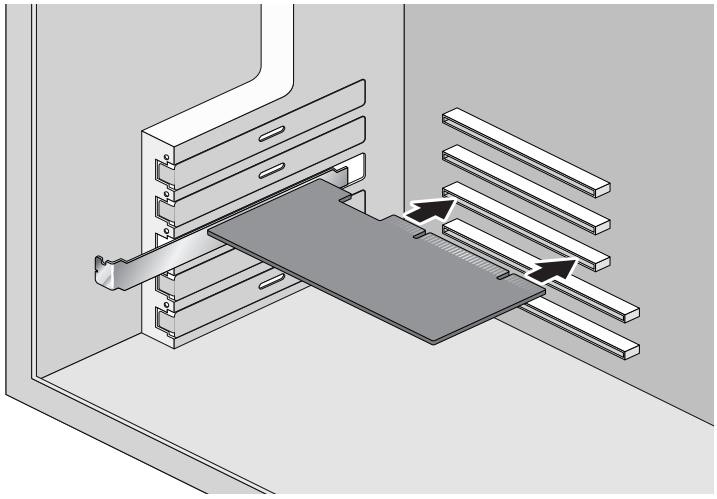


Figure 13. Inserting the Network Adapter Card

Caution

Do not use excessive force when seating the card, as the force may damage the system or the adapter card. If the card resists seating, remove it from the system, realign it, and try again.

6. Secure the network adapter card to the chassis with a Phillips-head screw (not provided) as shown in Figure 14.

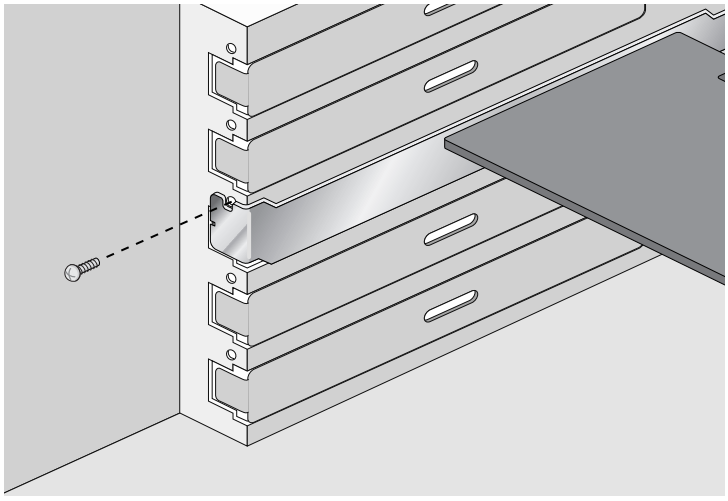


Figure 14. Securing the Adapter Card

7. Connect a SATA power connecter from the power supply on your system to the SATA receptacle on the AT-2911GP adapter card as shown in Figure 15 on page 33.

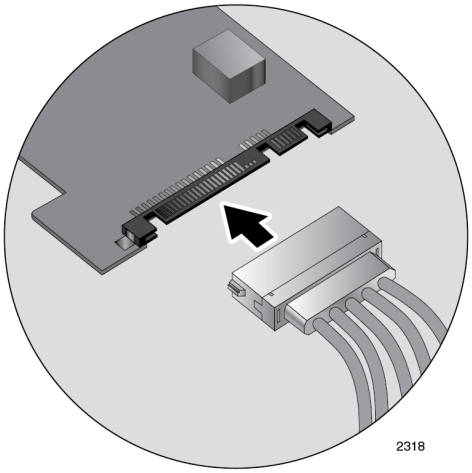


Figure 15. Connecting the SATA Receptacle

8. Replace the system's cover and secure it with the screws removed in step 2.

9. Disconnect any personal antistatic devices.

10. Power the system on.

> **Note**
> If you installed the adapter card in Windows XP system before installing the driver software, the Found New Hardware Wizard launches automatically. For more information, see Chapter 3, "Installing the Driver Software" on page 35.

When the system returns to proper operation, the adapter hardware is fully installed. Next, connect the network cables. See "Connecting the Network Cables" on page 34.

Connecting the Network Cables

The AT-2911GP adapter card is equipped with the fiber optic and PoE+ copper ports. The fiber optic port is for the network; the PoE+ copper port is for a PoE Powered Device (PD), such as a VoIP phone. To connect the adapter card to the network and PD, you must have a fiber optic cable with the appropriate connecter and a twisted-pair copper cable.

Connecting a Fiber Optic Network Cable

To connect a fiber optic network cable to the adapter, perform the following procedure:

1. Prepare a fiber optic cable with an appropriate connecter.

Warning
The fiber optic ports contain a Class 1 laser device. When the ports are disconnected, always cover them with the provided plug. Exposed ports may cause skin or eye damage.

2. Remove a rubber plug from the adapter.
3. Connect one end of the cable to the adapter.
4. Connect the other end of the cable to the appropriate Ethernet network port or fiber optic port.

Note
After the cable is properly connected at both ends, the adapter card LED should be functional. See Table 1 on page 17 for a description of LED operation.

Connecting a Twisted-Pair Copper Cable

To connect a twisted-pair copper cable to the adapter, perform the following procedure:

1. Prepare a twisted-pair copper cable.
2. Connect one end of the cable to the adapter.
3. Connect the other end of the cable to a PD, such as a VoIP phone.

Note
After the cable is properly connected at both ends, the adapter card LED should be functional. See Table 1 on page 17 for a description of LED operation.

Chapter 3

Installing the Driver Software

This chapter describes how to install driver software for the AT-2911GP adapter card onto your operating system. It contains the following topics:

- ❒ “Overview” on page 36
- ❒ “Downloading the Driver Software” on page 37
- ❒ “Accessing the Device Manager” on page 39
- ❒ “Installing the Driver Software” on page 45
- ❒ “Updating the Driver Software” on page 55
- ❒ “Performing the Silent Installation” on page 60

Overview

When you install the AT-2911GP adapter card on your computer, your next step is to install driver software onto your Windows operating system. You can install driver software using Device Manager or using the silent installation method.

When you install deriver software using Device Manager, the dialog boxes guide you through the installation process. On the other hand, using the silent installation method, you can install software without constant interactions by suppressing dialog boxes.

Guidelines

Here are the guidelines for installing and updating the driver software on your operating system:

- To install or update the driver software, you must have administrative privileges.
- When you install AT-2911GP adapter card on your computer and start the system, the Windows system creates two Ethernet controller entries for fiber and copper interfaces if your system no driver is installed. You must install driver software for each entry.
- When you install the AT-2911GP adapter card on your computer and start the system, the system detects a new adapter and may install a default driver. Or, the native Broadcom driver may be installed if your system has an onboard Broadcom network interface. In either case, you must update the driver software for the AT-2911GP adapter. See "Installing the Driver Using Device Manager", or "Installing the Driver Using the Silent Installation Method".

Installing the Driver Using Device Manager

To install or update the driver software using Device Manager, follow the steps below:

- "Downloading the Driver Software" on page 37
- "Accessing the Device Manager" on page 39
- "Installing the Driver Software" on page 45

  Or

- "Updating the Driver Software" on page 55

Installing the Driver Using the Silent Installation Method

To install or update the driver software using the silent installation, follow the steps below:

- "Downloading the Driver Software" on page 37
- "Performing the Silent Installation" on page 60

Downloading the Driver Software

The AT-2911GP adapter is not shipped with a software driver CD. You must download driver software from the Allied Telesis website.

To download driver software, do the following:

1. Open a web browser, such as Internet Explorer or FireFox, on your system and enter the following:

   http://www.alliedtelesis.com/support/software

2. The Allied Telesis Software Download page is displayed.

3. Select “AT-2911GP” from the pull-down menu.

   Figure 16 shows an example of the search result.

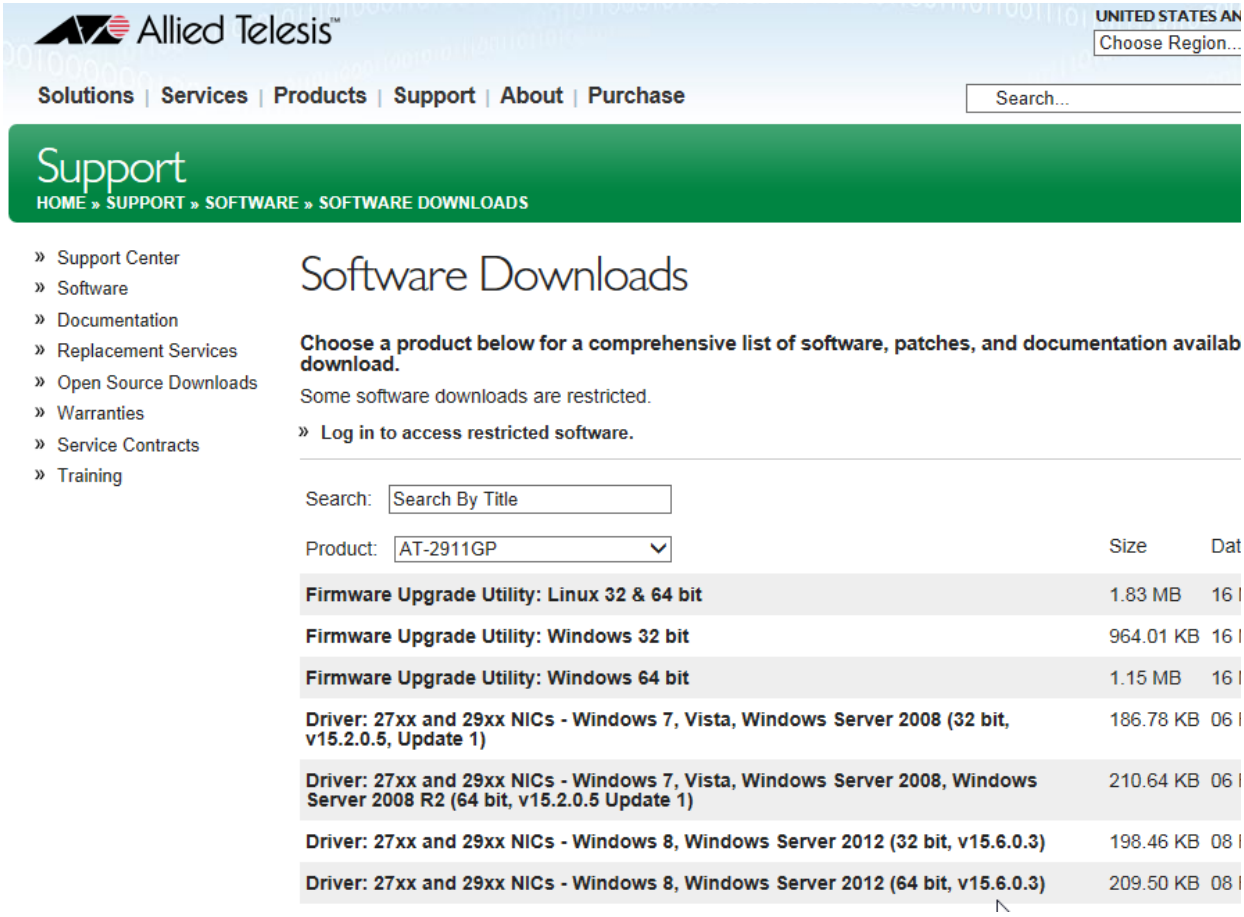


Figure 16. Software Downloads Search Result Example

4. Select the driver for your adapter model and operating system.

5. Save the zip folder onto your system.
6. Right-click the zip folder and select **Extract All**.

   A window as shown in Figure 17 pops up and prompts you to specify the location of a folder that you want to place unzipped files in.

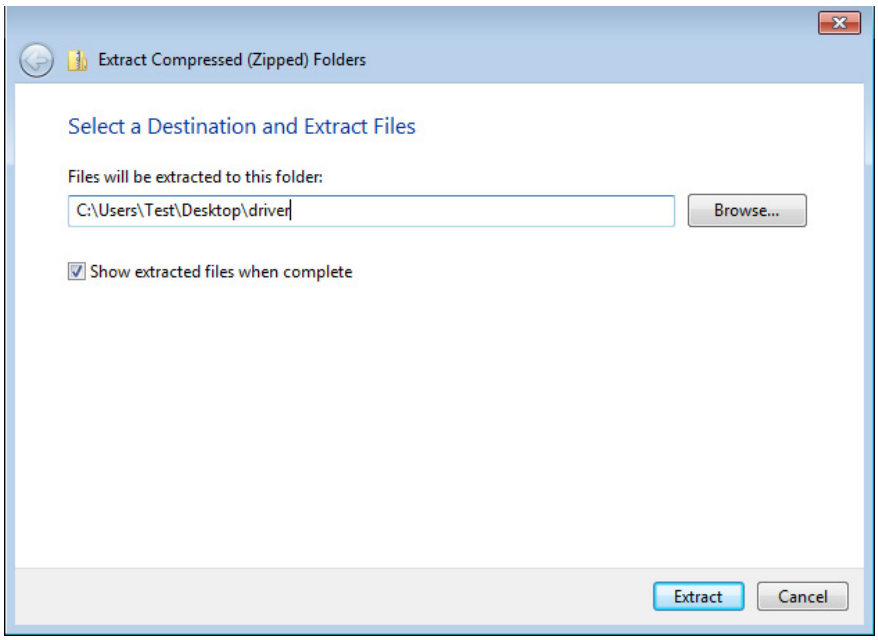


Figure 17. Specifying the Folder for Unzipped Files

7. Specify the location of the folder and click **Extract**.
8. Record the location of the folder.

Accessing the Device Manager

When you install or update the driver software for AT-2911GP adapter card, you must first access Device Manager.

The procedures for accessing Device Manager are slightly different among Windows operating systems. To access Device Manager on your operating system, follow one of the procedures below:

- “Accessing Device Manager on Windows Server 2012 or Windows 8,” next
- “Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7” on page 41
- “Accessing Device Manager on Windows Server 2003 or Windows XP” on page 42

Accessing Device Manager on Windows Server 2012 or Windows 8

To access Device Manager on Windows Server 2012 or Windows 8, do the following:

1. Move the cursor to the lower left corner of the desktop.

   The Start tile appears as shown in Figure 18.

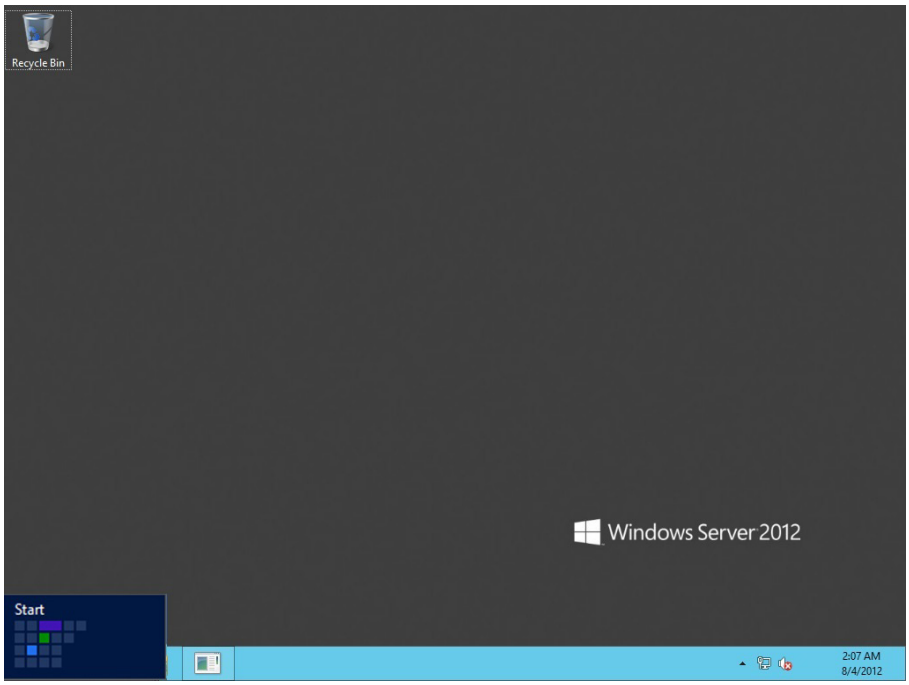


Figure 18. Start Tile on Windows Server 2012 and Windows 8

2. Right-click the **Start tile**.

The drop-up menu appears as shown in Figure 19.

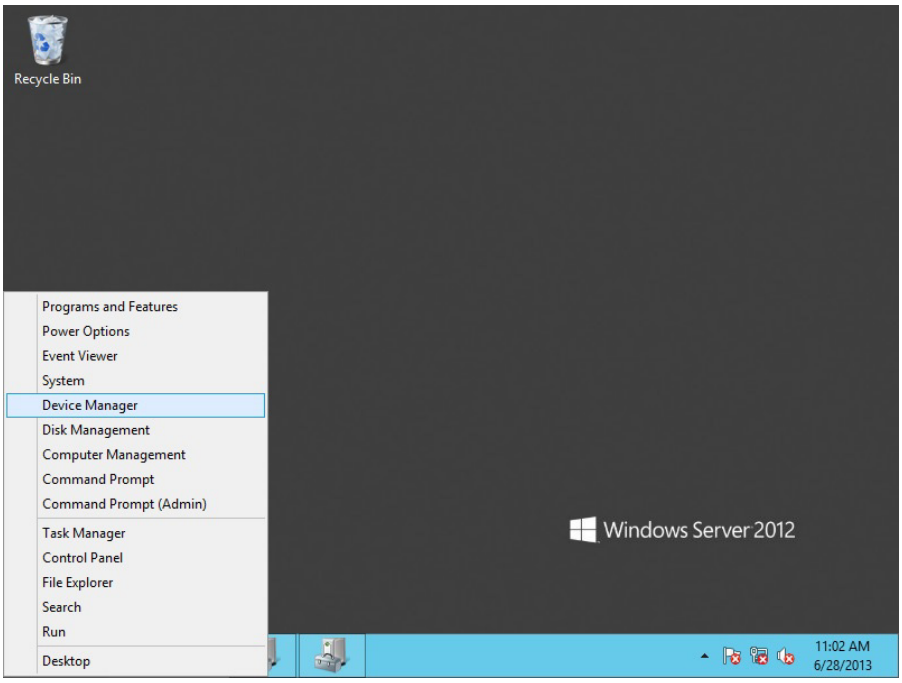


Figure 19. Drop-up Menu on Windows Server 2012 and Windows 8

3. Select **Device Manager** from the menu.

   The Device Manager window opens. The system creates two Ethernet Controller entries as shown in Figure 20 on page 41.

> **Note**
> The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see "Guidelines" on page 36.

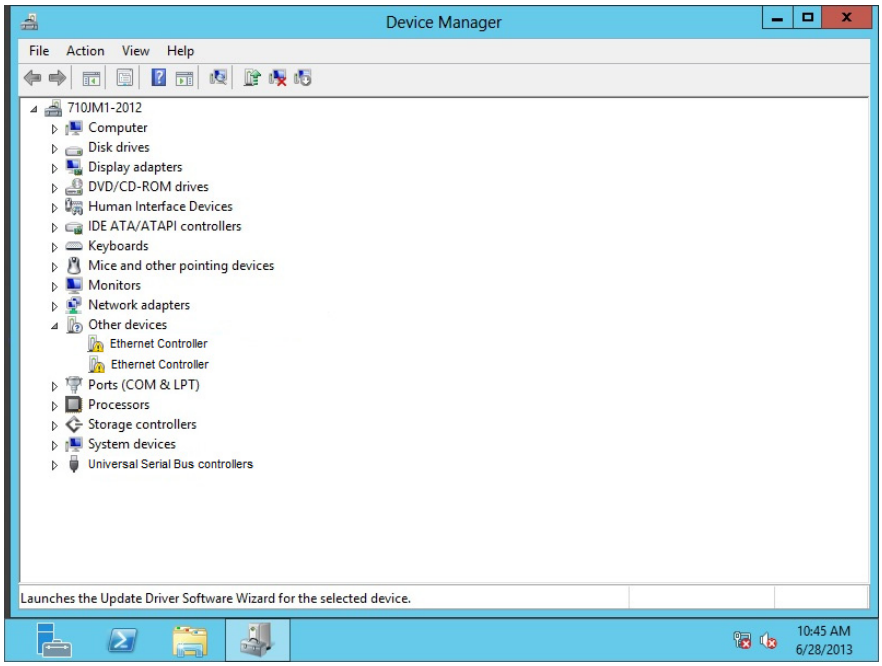


Figure 20. Device Manager on Windows Server 2012 and Windows 8

Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7

To access Device Manager on Windows Server 2008, Windows Vista, or Windows 7, do the following:

1. Right-click the **Computer** icon on the desktop and select **Properties**.

   The System window is opened as shown in Figure 21.

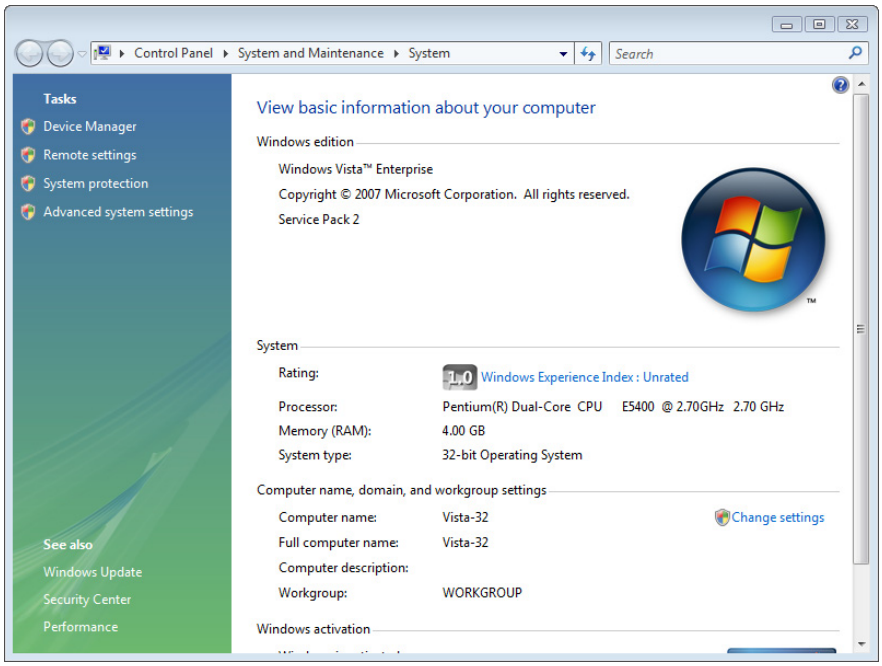


Figure 21. System Window on Server 2008, Vista, and 7

2. Click **Device Manager** on the left side bar.

   The Device Manager window opens. The system creates two Ethernet Controller entries as shown in Figure 22 on page 42.

Note
The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see "Guidelines" on page 36.

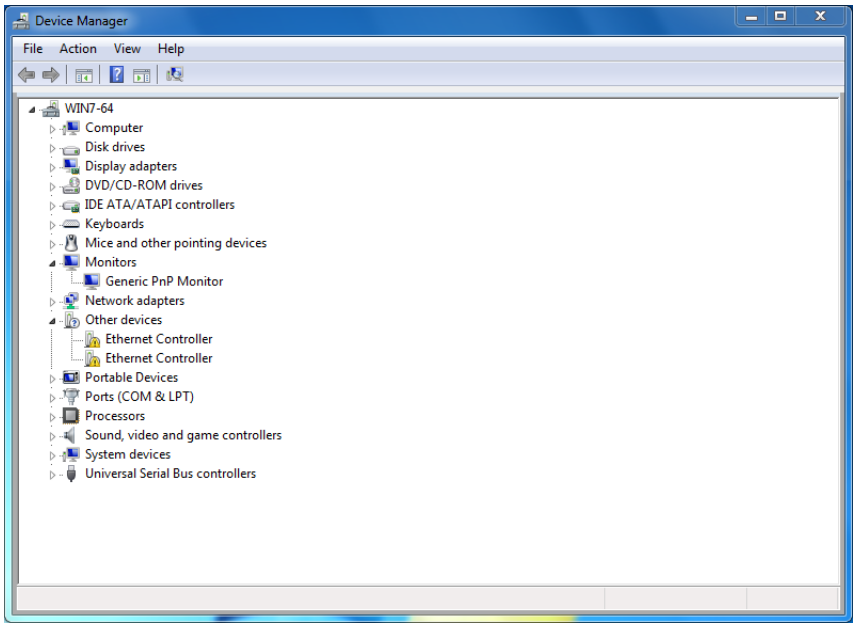


Figure 22. Device Manager Window on Server 2008, Vista, and 7

Accessing Device Manager on Windows Server 2003 or Windows XP

To access Device Manager on Windows Server 2003 or Windows XP, do the following:

1. Right-click the **My Computer** icon on the desktop and select **Properties**.

   The System Properties window is opened as shown in Figure 23.

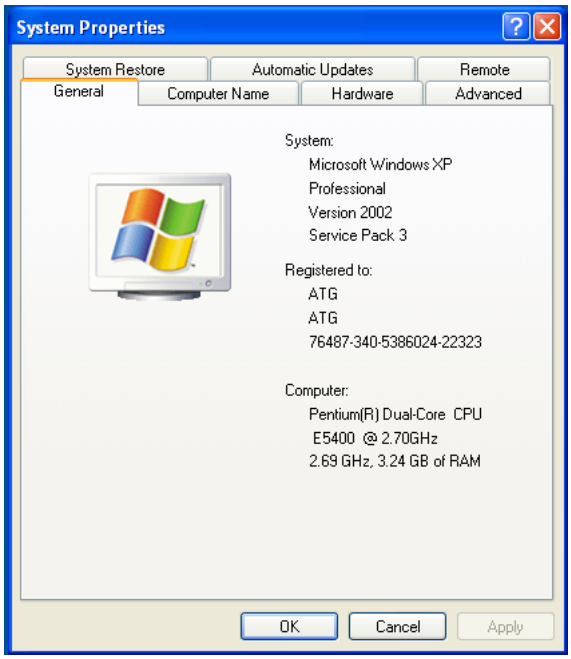


Figure 23. System Properties Window on Windows Server 2003 and XP

2. Select the **Hardware** Tab.

   The Hardware page is shown in Figure 24.

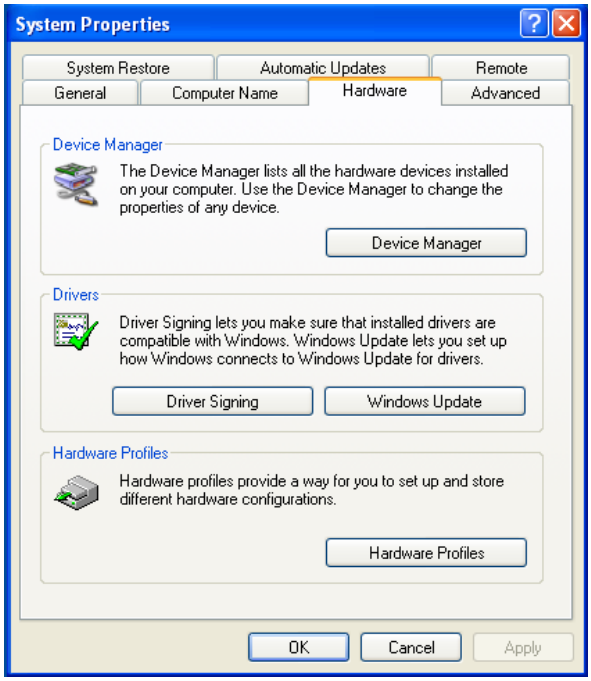


Figure 24. Hardware Page on Windows Server 2003 and XP

3. Click **Device Manager**.

The Device Manager window opens. The system creates two Ethernet Controller entries as shown in Figure 25.

Note

The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see "Guidelines" on page 36.

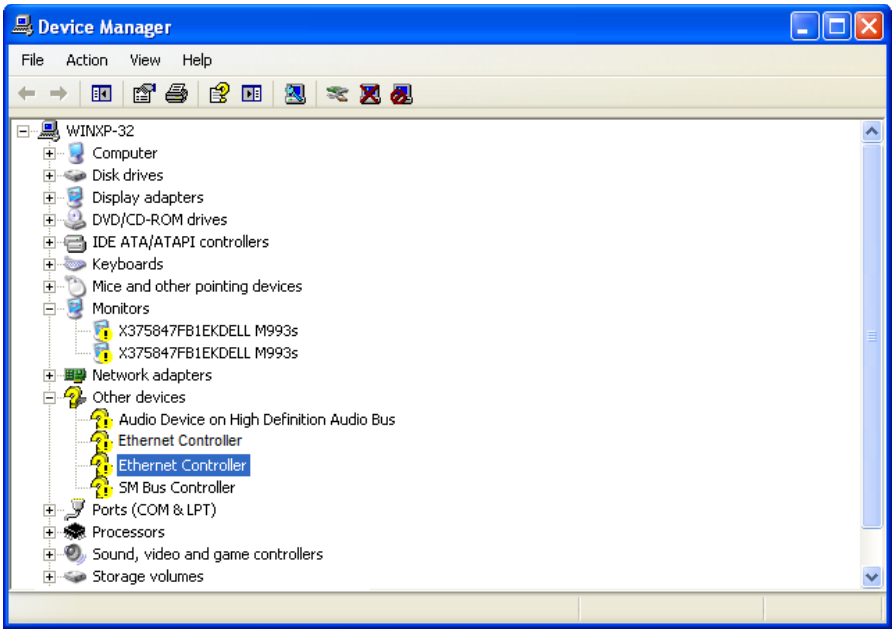


Figure 25. Device Manager Window on Windows Server 2003 and XP

Installing the Driver Software

Once you physically install the AT-2911GP adapter, the system detects the new hardware and creates two entries in Device Manager when the Windows operating system first boots up. Shortly after you log in, you need to install the driver software for your adapter card.

> **Note**
> To install the driver software, you must have administrative privileges.

The procedures for installing the driver software are slightly different among Windows operating systems. To install the driver software on your system, follow one of the procedures below:

- ❒ "Installing the Driver Software on Windows Server 2012 or Windows 8," next
- ❒ "Installing the Driver Software on Windows Server 2008, Windows Vista, or Windows 7" on page 48
- ❒ "Installing the Driver Software on Windows Server 2003 or Windows XP" on page 51

Installing the Driver Software on Windows Server 2012 or Windows 8

To install the driver software on Windows Server 2012 or Windows 8:

1. Access Device Manager. see "Accessing Device Manager on Windows Server 2012 or Windows 8" on page 39.
2. In the Device Manager window, right-click an **Ethernet Controller** entry.

> **Note**
> The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see "Guidelines" on page 36.

The shortcut menu appears as shown in Figure 26 on page 46.

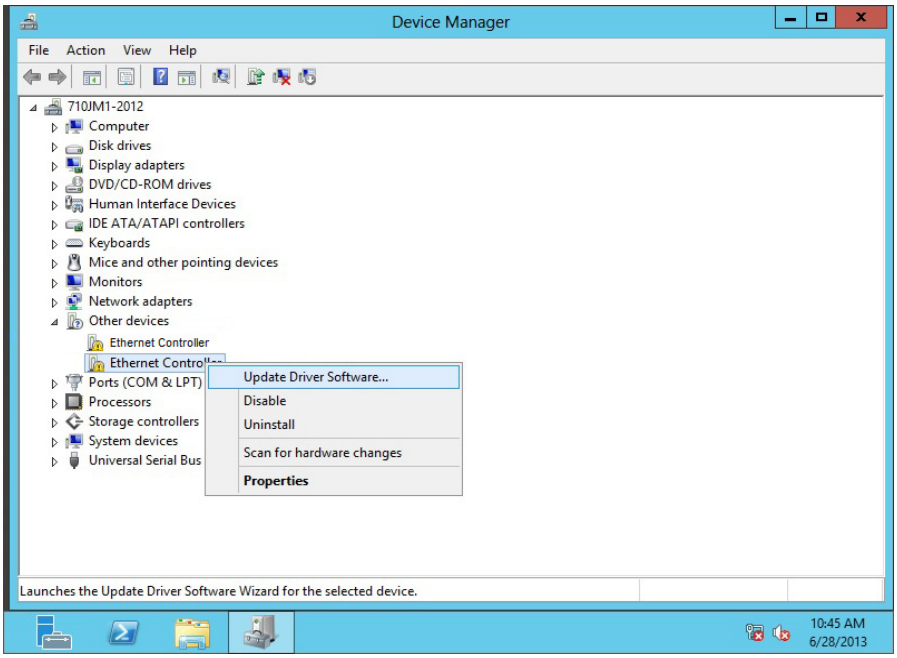


Figure 26. Ethernet Controller on Windows Server 2012 and Windows 8

3. Select **Update Driver Software**.

   The Update Driver Software window pops up as shown in Figure 27.

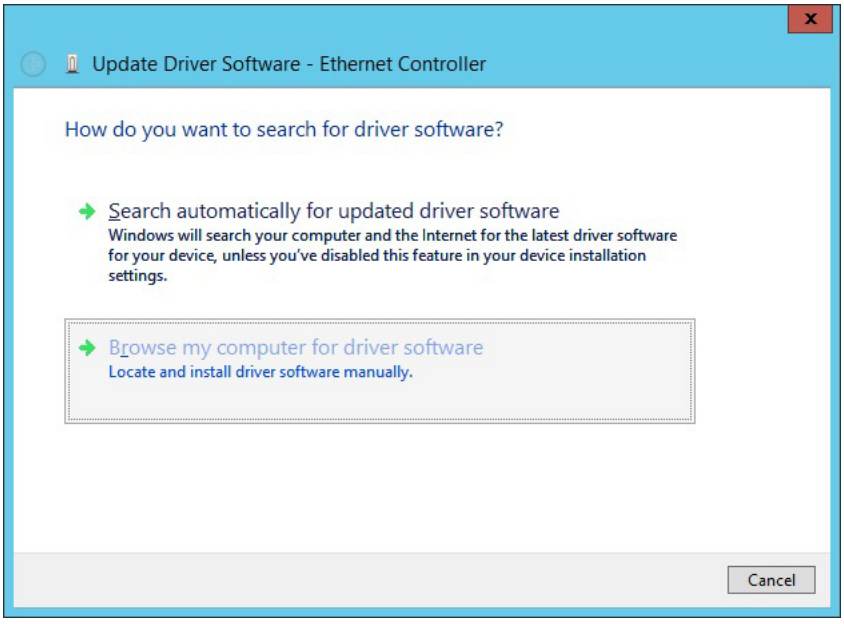


Figure 27. Update Driver Software Window on Windows Server 2012 and Windows 8

4. Select **Browse my computer for driver software**.

   The Update Driver Software window prompts you to enter the location of the driver folder as shown in Figure 28.

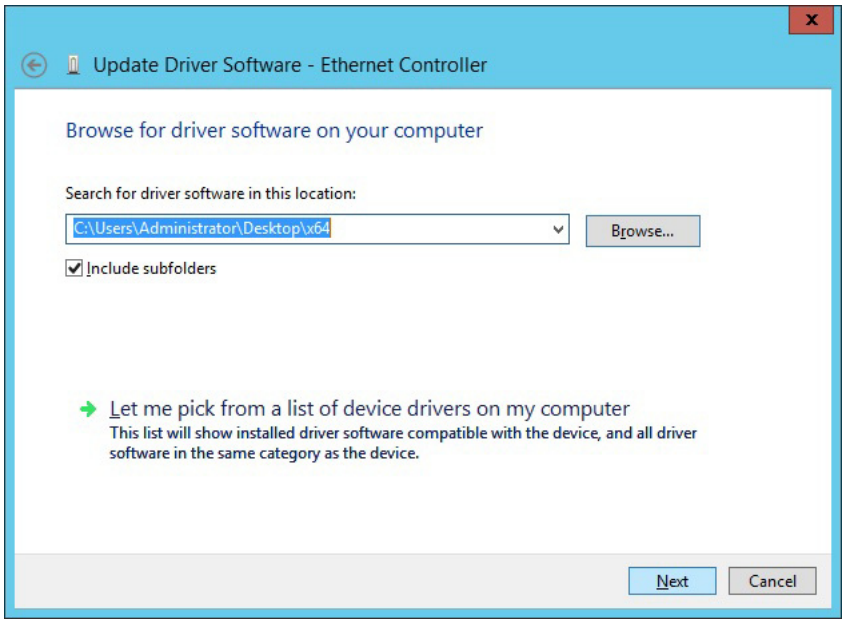


Figure 28. Update Driver Software Window on Windows Server 2012 and Windows 8

5. Specify the location of the driver software. See “Downloading the Driver Software” on page 37 for details.

6. Click **Next**.

   The confirmation message shown in Figure 29 on page 48 appears when the driver software is successfully updated.

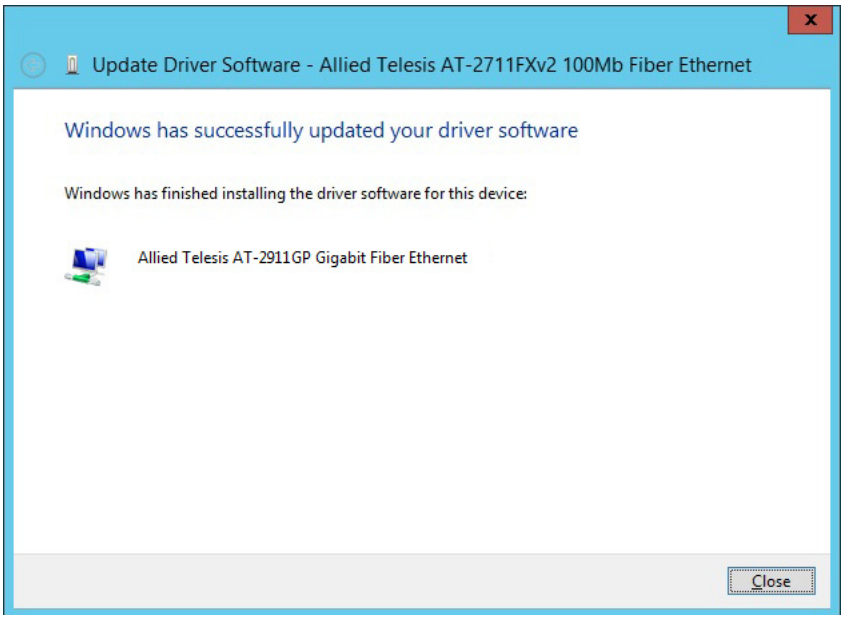


Figure 29. Update Driver Software Window on Windows Server 2012 and Windows 8

7. Click **Close**.
8. Repeat step 2 to step 7 on the other **Ethernet Controller** entry.

Installing the Driver Software on Windows Server 2008, Windows Vista, or Windows 7

To install the driver software on Windows Server 2008, Windows Vista or Windows 7, do the following:

1. Access Device Manager. see "Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7" on page 41.
2. In the Device Manager window, right-click an **Ethernet Controller** entry.

> **Note**
> The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see "Guidelines" on page 36.

The shortcut menu appears as shown in Figure 30 on page 49.

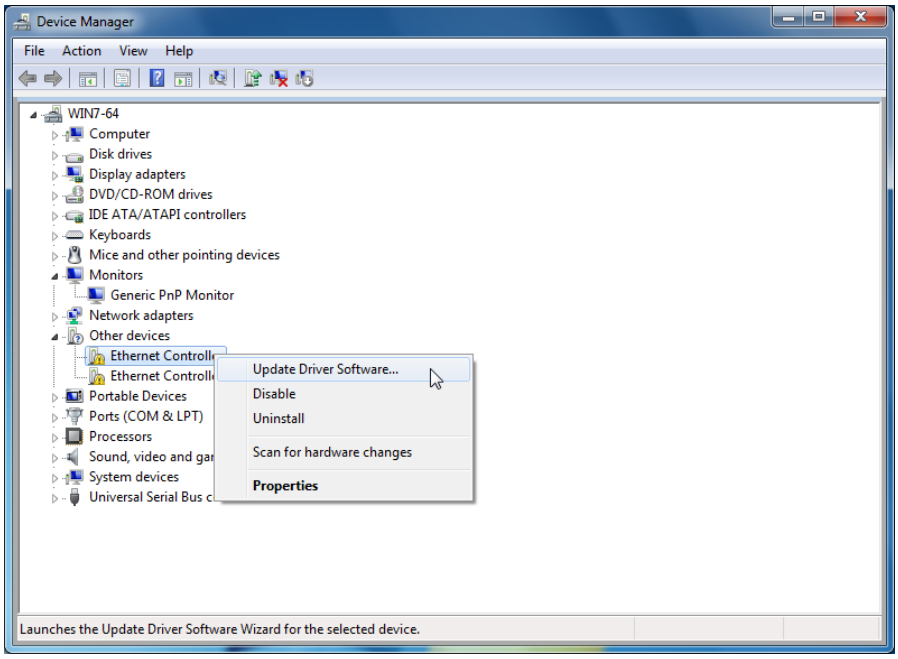


Figure 30. Ethernet Controller on Windows Server 2008, Vista, and 7

3. Select **Update Driver Software**.

   The Update Driver Software window pops up as shown in Figure 31.

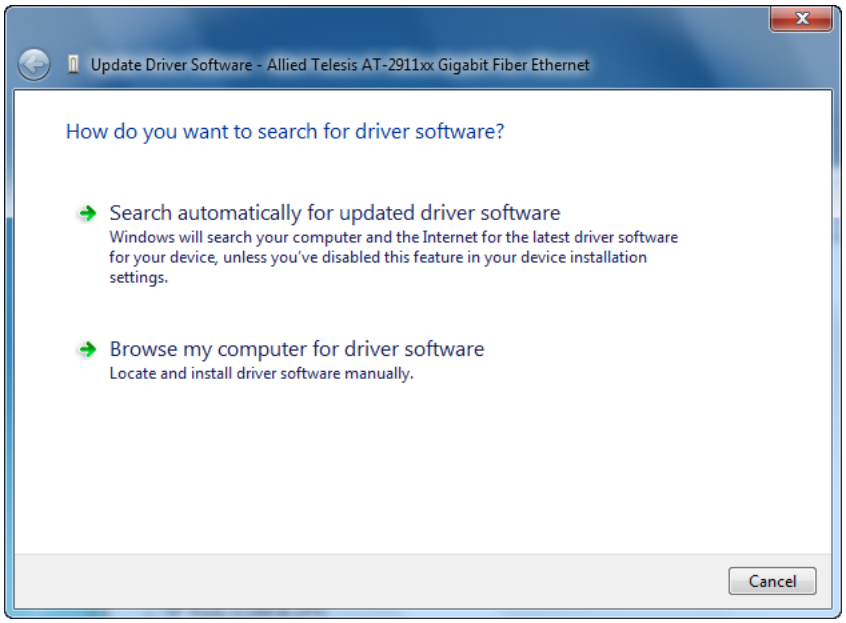


Figure 31. Update Driver Software Window on Windows Server 2008, Vista, and 7

4. Select **Browse my computer for driver software**.

   The Update Driver Software window prompts you to enter the location of the driver folder as shown in Figure 32.

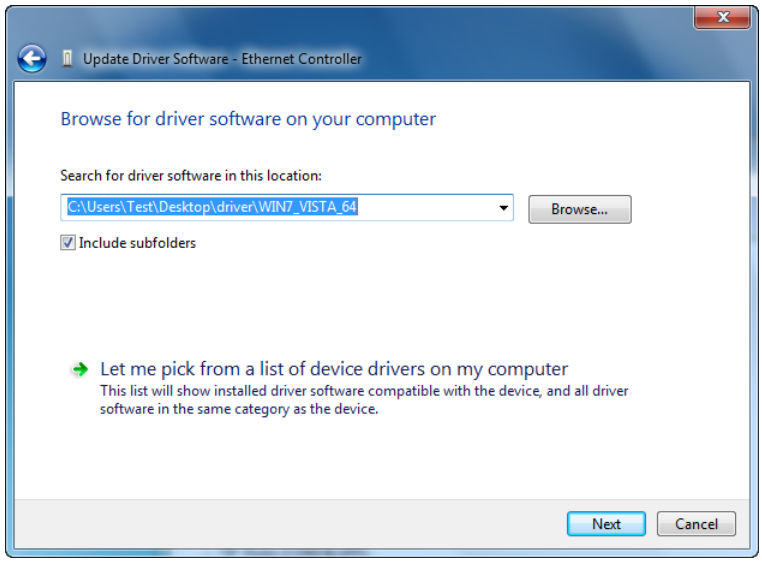


Figure 32. Update Driver Software on Windows Server 2008, Vista, and 7

5. Specify the location of the driver software. See "Downloading the Driver Software" on page 37 for details.

6. Click **Next**.

   The confirmation message shown in Figure 33 on page 50 appears when the driver software is successfully updated.

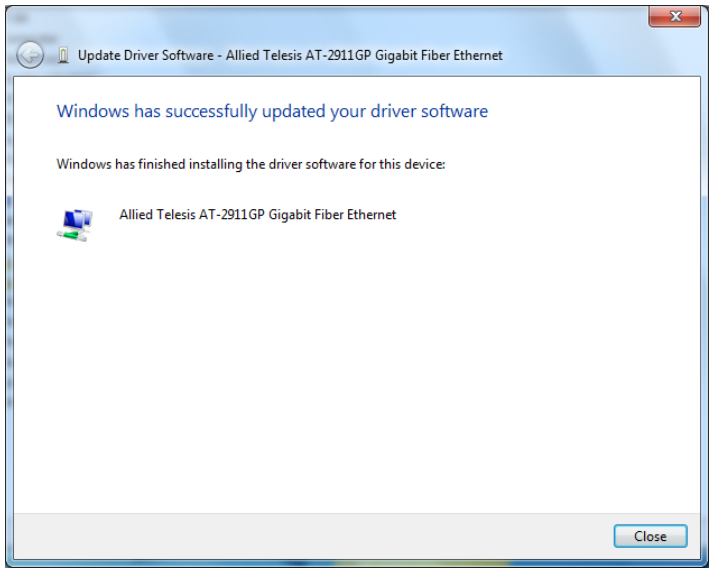


Figure 33. Update Driver Software on Windows Server 2008, Vista, and 7

7. Click **Close**.

8. Repeat step 2 to step 7 on the other **Ethernet Controller** entry.

Installing the Driver Software on Windows Server 2003 or Windows XP

To install the driver software onto Windows Server 2003 and Windows XP, do the following:

1. Access Device Manager. See “Accessing Device Manager on Windows Server 2003 or Windows XP” on page 42.

2. In the Device Manager window, right-click an **Ethernet Controller** entry.

> **Note**
> The Windows system lists two entries as Ethernet Controllers if no driver is installed. The system may list entries as Broadcom NetXtreme devices or Allied Telesis devices. For more information, see “Guidelines” on page 36.

The shortcut menu appears as shown in Figure 34 on page 51.

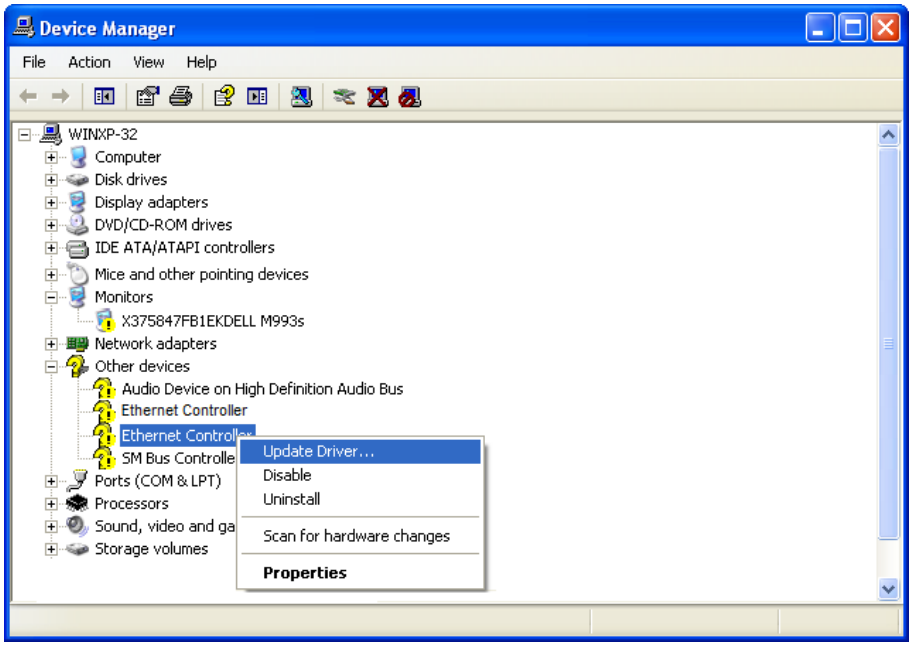


Figure 34. Ethernet Controller on Windows Server 2003 and XP

3. Select **Update Driver**.

The Hardware Update Wizard window pops up as shown in Figure 35 on page 52.

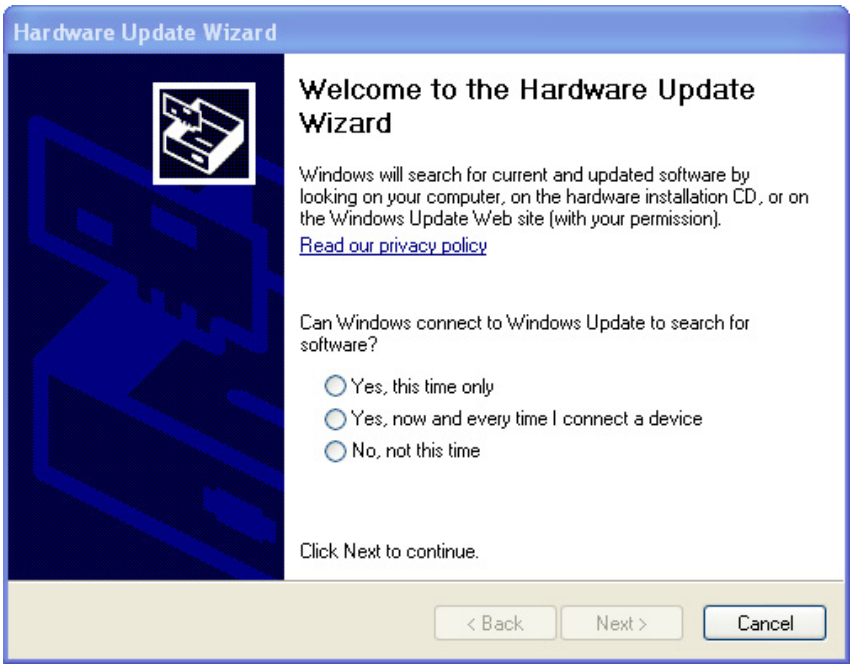


Figure 35. Hardware Update Wizard 1

4. Select **No, not this time**.
5. Click **Next**.

   The Hardware Update Wizard prompts you to select one of two options as shown in Figure 36

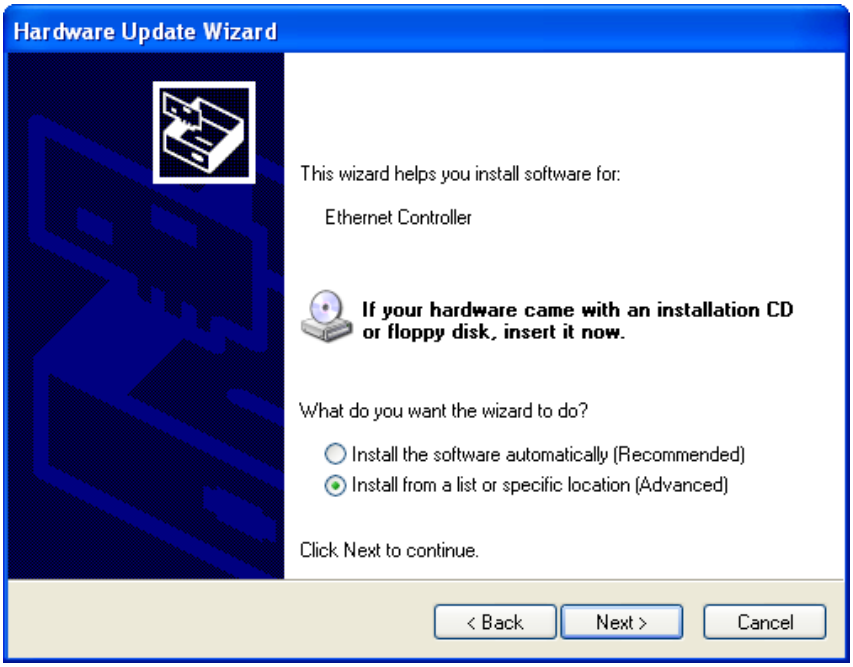


Figure 36. Hardware Update Wizard 2

6. Select **Install from a list or specific location (Advanced)**.
7. Click **Next**.

   The Hardware Update Wizard prompts you to specify the location of your driver software as shown in Figure 37 on page 53.

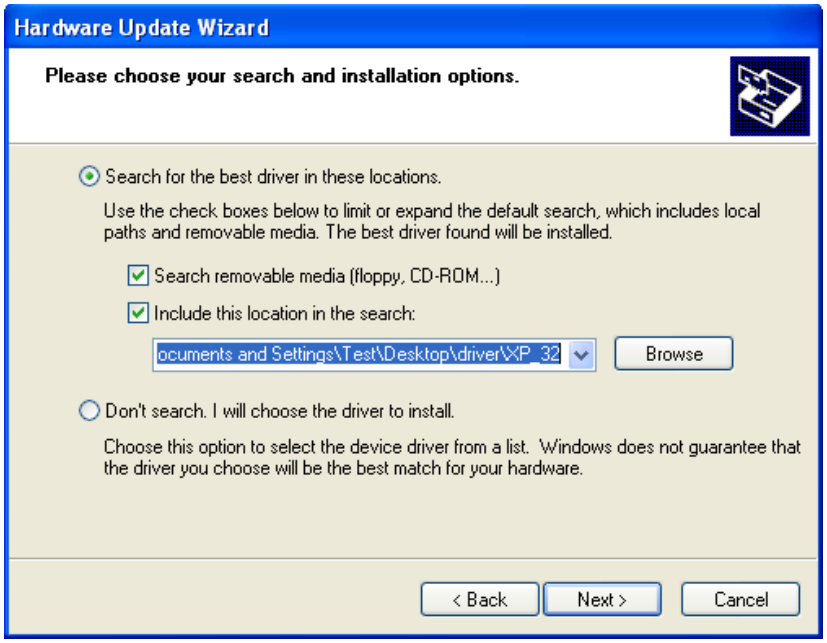


Figure 37. Hardware Update Wizard 3

8. Specify the location of the driver software.
9. Click **Next**.

   The confirmation message is displayed as shown in Figure 38 on page 54.

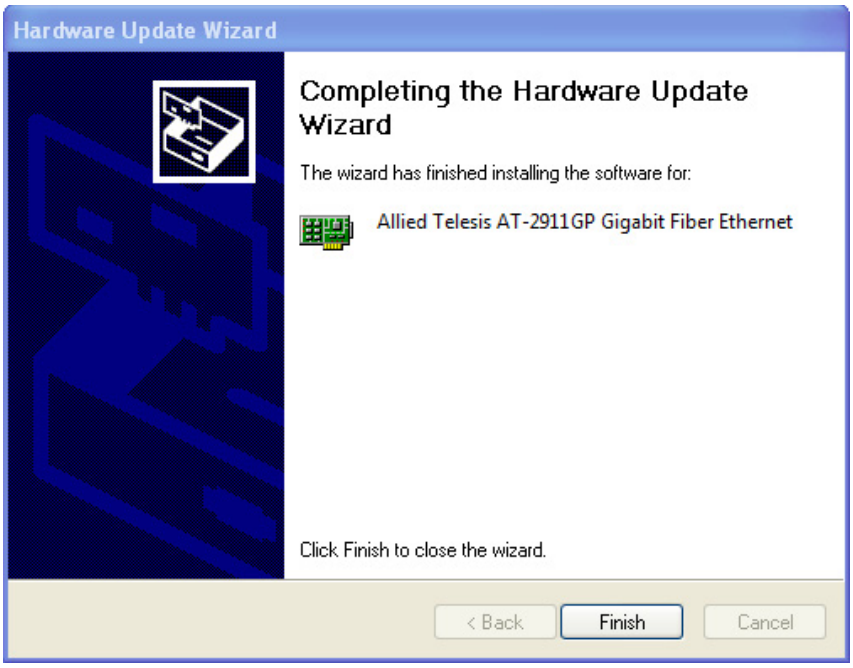


Figure 38. Hardware Update Wizard 4

10. Click **Finish**.

11. Repeat step 2 to step 10 on the other **Ethernet Controller** entry.

Updating the Driver Software

If your operating system automatically installs a default driver or Broadcom driver, you need to update the driver software with the driver that you downloaded from the Allied Telesis website. To obtain the latest version of the AT-2911GP adapter driver, see “Downloading the Driver Software” on page 37.

To update the driver software, you use the same procedure for installing the driver software for the first time. The only difference between updating and installing the driver software is the name of your adapter that Device Manager detects and lists.

Device Manager lists your adapter card entries as Allied Telesis AT-2911GP Gigabit Copper Ethernet and Allied Telesis AT-2911GP Gigabit Fiber Ethernet once you installed the driver software. Before you installed the driver software, Device Manager lists your adapter entries as Ethernet Controllers, Broadcom NetXtreme devices, or Allied Telesis devices.

The procedures for installing the driver software are slightly different among Windows operating systems. To install the driver software on your system, follow one of the procedures below:

- “Updating the Driver on Windows Server 2012 or Windows 8,” next
- “Updating the Driver on Windows Server 2008, Windows Vista, or Windows 7” on page 57
- “Updating the Driver on Windows Server 2003 or Windows XP” on page 58

Updating the Driver on Windows Server 2012 or Windows 8

To update the driver software for your AT-2911GP adapter card, perform the following procedure:

1. Access the Device Manager. See “Accessing Device Manager on Windows Server 2012 or Windows 8” on page 39.

   The Device Manager window pops up as shown in Figure 39 on page 56.

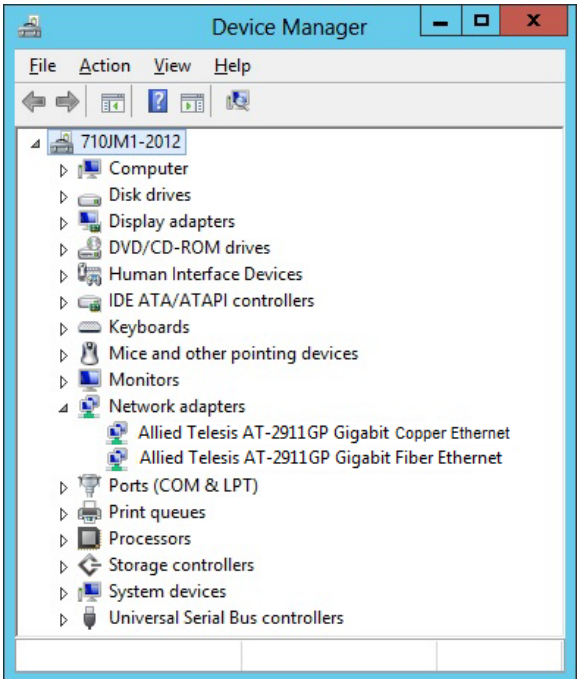


Figure 39. Device Manager on Windows Server 2012 and Windows 8

2. In the Device Manager window, right-click an **Allied Telesis AT-2911GP Ethernet** entry.

   The shortcut menu appears.

3. Select **Update Driver Software**.

   The Update Driver Software window pops up as shown in Figure 26 on page 46.

4. Select **Browse my computer for driver software**.

   The Update Driver Software window prompts you to enter the location of the driver folder as shown in Figure 28 on page 47.

5. Specify the location of the driver software.

6. Click **Next**.

   The confirmation message appears when the driver software is successfully updated. See Figure 29 on page 48.

7. Click **Close**.

8. Repeat step 2 to step 7 on the other **Allied Telesis AT-2911GP Ethernet** entry.

Updating the Driver on Windows Server 2008, Windows Vista, or Windows 7

To update the driver software for your AT-2911GP adapter card, perform the following procedure:

1. Access the Device Manager. See “Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7” on page 41.

2. In the Device Manager window, right-click an **Allied Telesis AT-2911GP Ethernet** entry.

   The shortcut menu appears as shown in Figure 40.

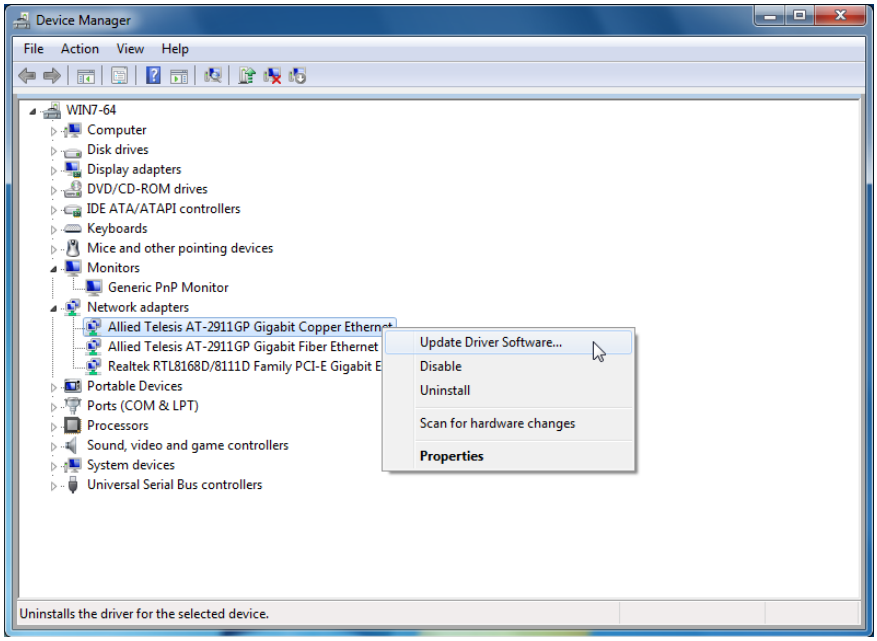


Figure 40. Device Manager with an Expanded List on Windows Server 2008, Vista, and 7

3. Select **Update Driver Software**.

   The Update Driver Software window pops up as shown in Figure 31 on page 49.

4. Select **Browse my computer for driver software**.

   The Update Driver Software window prompts you to enter the location of the driver folder as shown in Figure 32 on page 50.

5. Specify the location of the driver software.

6. Click **Next**.

   The confirmation message appears when the driver software is successfully updated. See Figure 33 on page 50.

7. Click **Close**.

8. Repeat step 2 to step 7 on the other **Allied Telesis AT-2911GP Ethernet** entry.

Updating the Driver on Windows Server 2003 or Windows XP

To install the driver software for the AT-2911GP adapter card onto the Windows Server 2003 and Windows XP, do the following:

1. Access Device Manager. See "Accessing Device Manager on Windows Server 2003 or Windows XP" on page 42.

2. In the Device Manager window, right-click an **Allied Telesis AT-2911GP Ethernet** entry.

   The shortcut menu appears as shown in Figure 41.

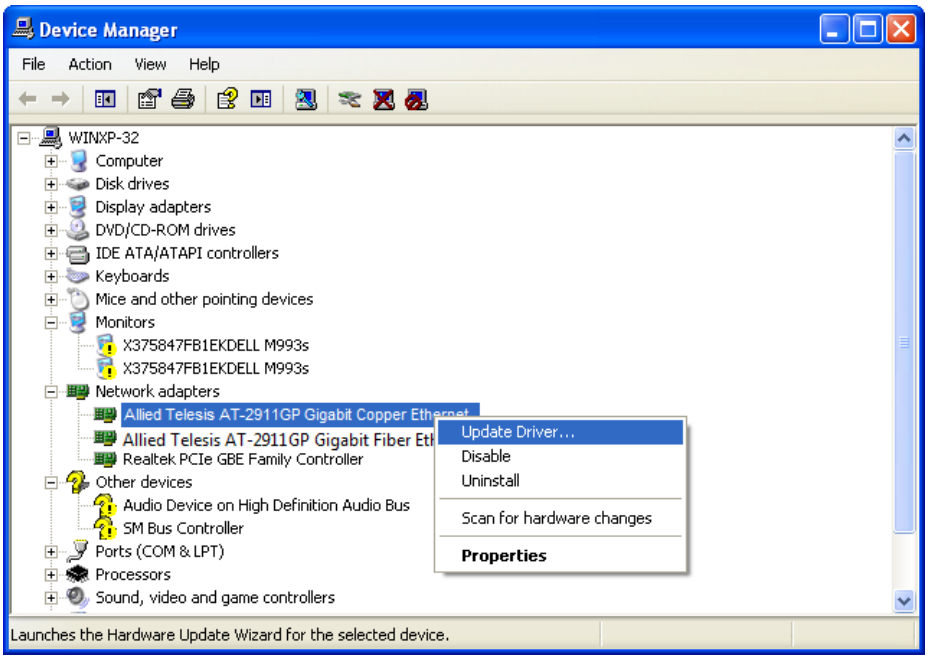


Figure 41. Network Adapters on Windows Server 2003 and XP

3. Select **Update Driver**.

   The Hardware Update Wizard window pops up as shown in Figure 35 on page 52.

4. Select **No, not this time**.

5. Click **Next**.

   The Hardware Update Wizard prompts you to select one of two options as shown in Figure 36 on page 52.

6. Select **Install from a list or specific location (Advanced)**.

7. Click **Next**.

The Hardware Update Wizard prompts you to specify the location of your driver software as shown in Figure 37 on page 53.

8. Specify the location of the driver software that you downloaded from Allied Telesis website.

9. Click **Next**.

   The confirmation message is displayed as shown in Figure 38 on page 54.

10. Click **Finish**.

11. Repeat step 2 to step 10 on the other **Allied Telesis AT-2911GP Ethernet** entry.

Performing the Silent Installation

To simplify the driver installation process, you may perform a silent installation when installing driver software for the AT-2911GP adapter card entries. The silent installation is a method of installing software in the silent mode without constant interactions by suppressing dialog boxes.

Note
You can apply the silent installation method only to Microsoft certified drivers. The drivers that Allied Telesis provides for the AT-2911GP adapters are all Microsoft certified.

Use a command line utility called Driver package Installer (DPInst) for the silent installation. DPInst is included in the Windows Developer Kit (WDK) provided by Microsoft. You can obtain the latest DPInst by downloading and installing the latest WDK from the Microsoft website.

Installing the Driver Silently

To install the driver silently, perform the following instructions:

1. Create a folder in your Windows system.
2. Download driver software for the AT-2911GP adapter.

   See "Downloading the Driver Software" on page 37.
3. Place the driver files that you downloaded into the folder that you created in step 1.

   The folder should include the following driver files:

   - `.sys`
   - `.inf`
   - `.cat`
4. Download the latest WDK to obtain the `dpinst` utility.

   Consult Microsoft websites to download WDK.
5. Place the `dpinst.exe` and its supporting files in the same folder where you placed the driver files.

   You must place the 64-bit `dpinst` utility if your operating system is the 64-bit version. Place the 32-bit for `dpinst` utility for the 32-bit version operating system.
6. Open a command prompt window with administrator privileges.

7. Change the directory to the folder where the `dpinst` utility and the driver files reside.

8. Install the driver in the silent mode by entering the following command:

   ```
   > dpinst /S
   ```

   Note
   Adding the `/S` switch to the `dpinst` command suppresses the display of wizard pages, user dialog boxes, and other user intervention requests.

   The driver is installed silently.

Viewing Supported DPInst Options

You can display help information about the `dpinst` command-line options.

View all supported `dpinst` options by executing the following command:

1. Open a command prompt window with administrator privileges.

2. Change the directory to the folder where the `dpinst` utility and the driver files reside.

   ```
   > dpinst /?
   ```

   The command displays the help text.

Chapter 4

Installing the AT-MUX Utility

This chapter describes how to install the AT-MUX utility onto your operating system and set VLAN properties.

This chapter contains the following topics:

- “Overview” on page 64
- “Downloading the AT-MUX Utility Setup File” on page 65
- “Installing the AT-MUX Utility” on page 67
- “Accessing the AT-MUX Utility” on page 69
- “Uninstalling the AT-MUX Utility” on page 72

Overview

The AT-MUX utility is a Windows based application that bridges the fiber optic port to the copper port. Once you installed the AT-MUX utility on your system, the copper port of the AT-2911GP adapter card turns into a switch port. When you want to connect a VoIP phone to your PC, you must install the AT-MUX utility on your Windows operating system.

Supported Operating Systems

The following list shows the supported operating systems for the AT-MUX utility:

- Windows 7
- Windows XP 32-bit

Guidelines

Here are the guidelines for installing on your operating system:

- To install the AT-MUX utility, you must have administrative privileges.
- Once you install the AT-MUX utility on your computer, the copper port no longer functions as a regular network port. For example, you cannot assign an IP address to the copper port. If you want to use the copper port as a network port, uninstall the AT-MUX utility. See "Uninstalling the AT-MUX Utility" on page 72.

Using the AT-MUX Utility

To use the AT-MUX utility to work as a bridge between the fiber optic port and copper port of the AT-2911GP adapter card, follow the steps below:

- "Downloading the AT-MUX Utility Setup File" on page 65
- "Installing the AT-MUX Utility" on page 67
- "Accessing the AT-MUX Utility" on page 69

Downloading the AT-MUX Utility Setup File

The AT-2911GP adapter is not shipped with a AT-MUX utility CD. You must download the AT-MUX utility setup file from the Allied Telesis website.

To download driver software, do the following:

1. Open a web browser, such as Internet Explorer or FireFox, on your system and enter the following:

   http://www.alliedtelesis.com/support/software

2. The Allied Telesis Software Download page is displayed.

3. Select “AT-2911GP” from the pull-down menu.

   Figure 42 shows an example of the search result.

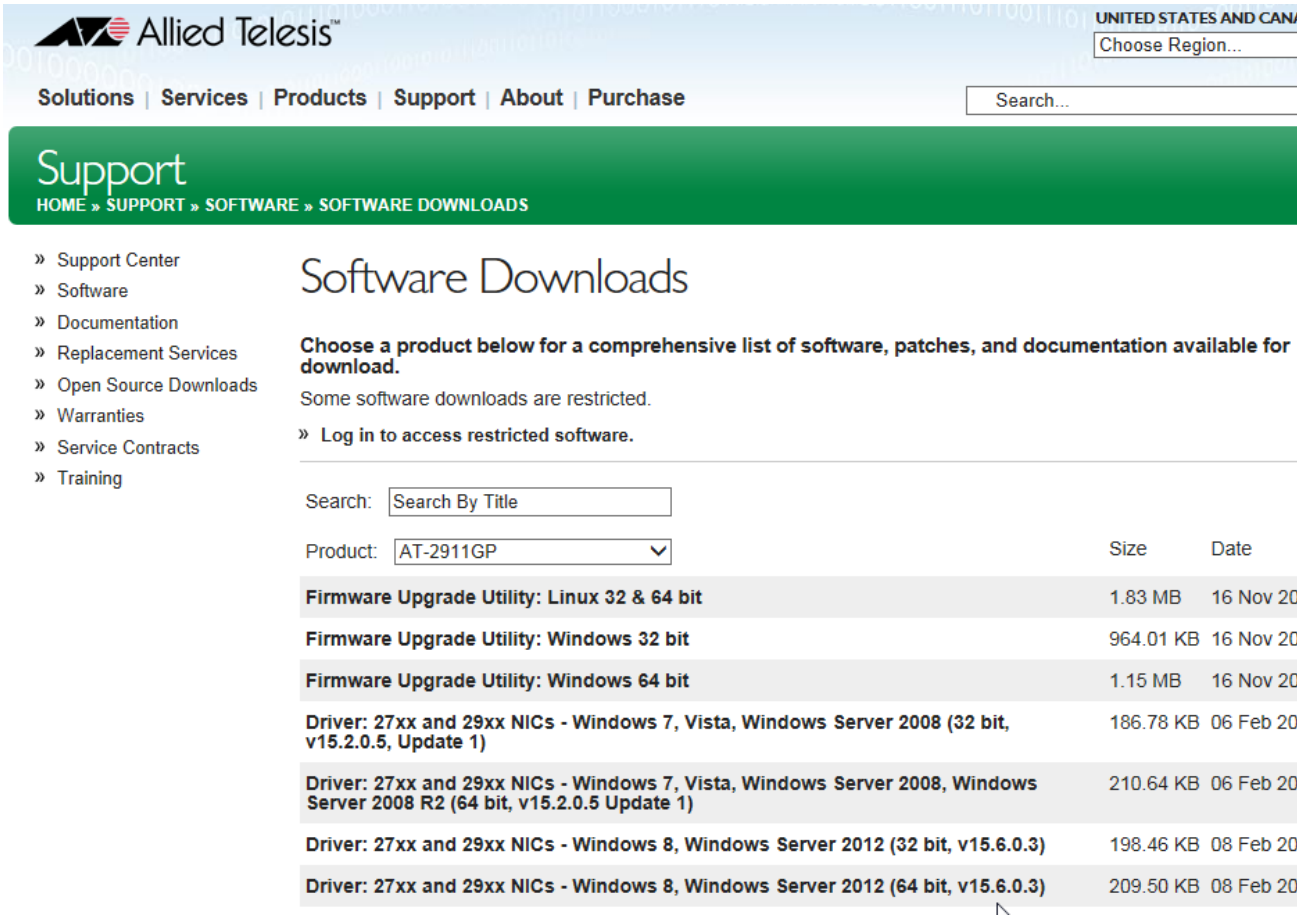


Figure 42. Software Downloads Search Result Example

4. Select the AT-MUX for your operating system.

5. Save the zip folder onto your system.
6. Right-click the zip folder and select **Extract All**.

   A window as shown in Figure 43 pops up and prompts you to specify the location of a folder that you want to place unzipped files in.

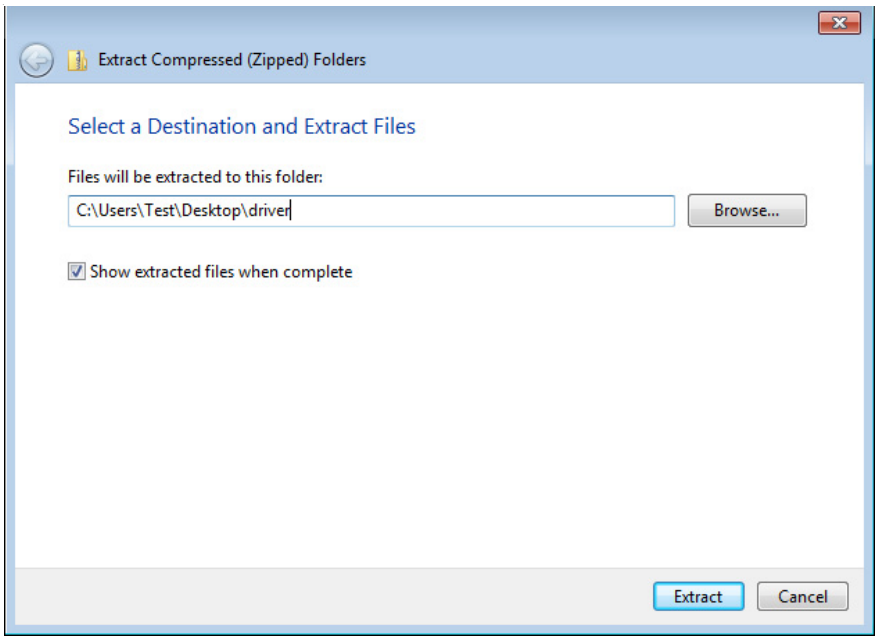


Figure 43. Specifying the Folder for Unzipped Files

7. Specify the location of the folder and click **Extract**.
8. Record the location of the folder.

Installing the AT-MUX Utility

After you download the AT-MUX utility setup file from Allied Telesis website, install the AT-MUX utility.

> **Note**
> To install the AT-MUX utility, you must have administrative privileges.

1. Click the AT-MUX utility setup file that you just downloaded.

   The AT-MUX Setup Wizard starts as shown in Figure 44.

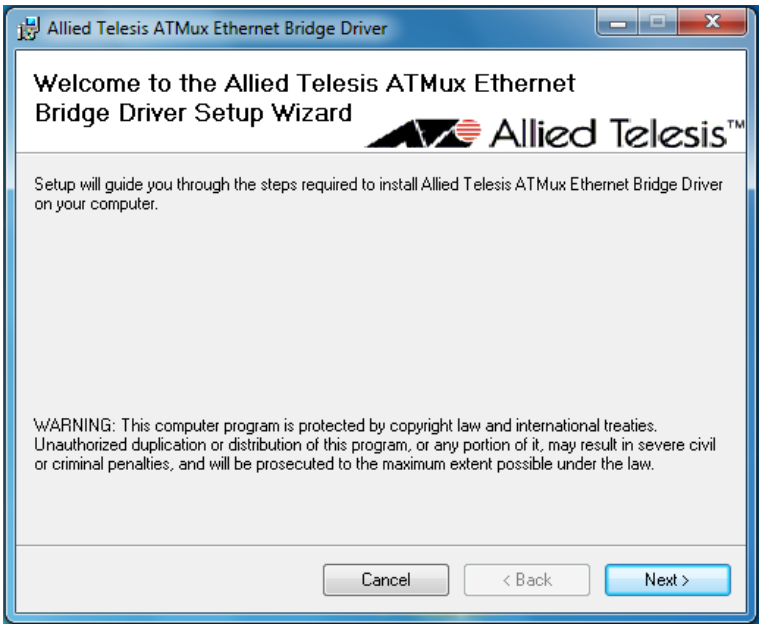


Figure 44. AT-MUX Setup Wizard 1

2. Click **Next**.

   The wizard asks you to confirm the installation of the AT-MUX utility as shown in Figure 45 on page 68.

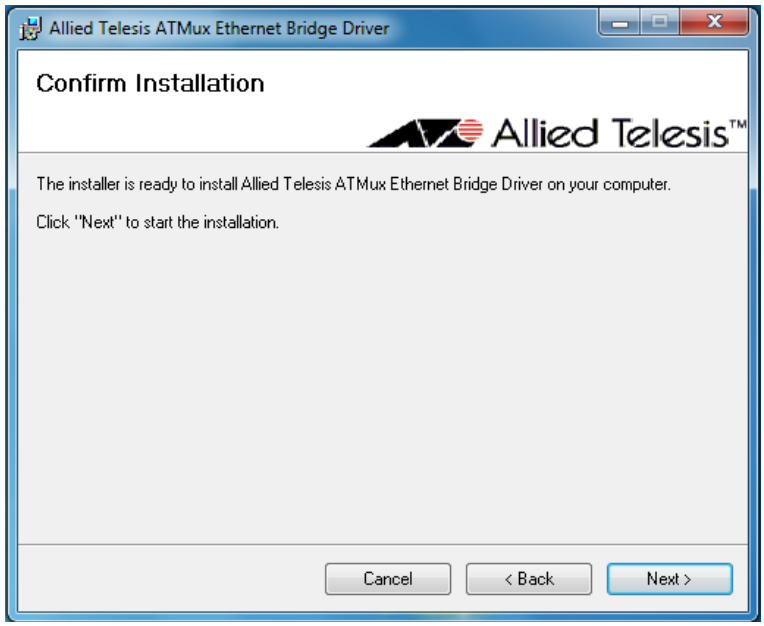


Figure 45. AT-MUX Setup Wizard 2

3. Click **Nex**t.

   The confirmation message appears as shown in Figure 46 when the AT-MUX utility is successfully installed.

   Figure 46.

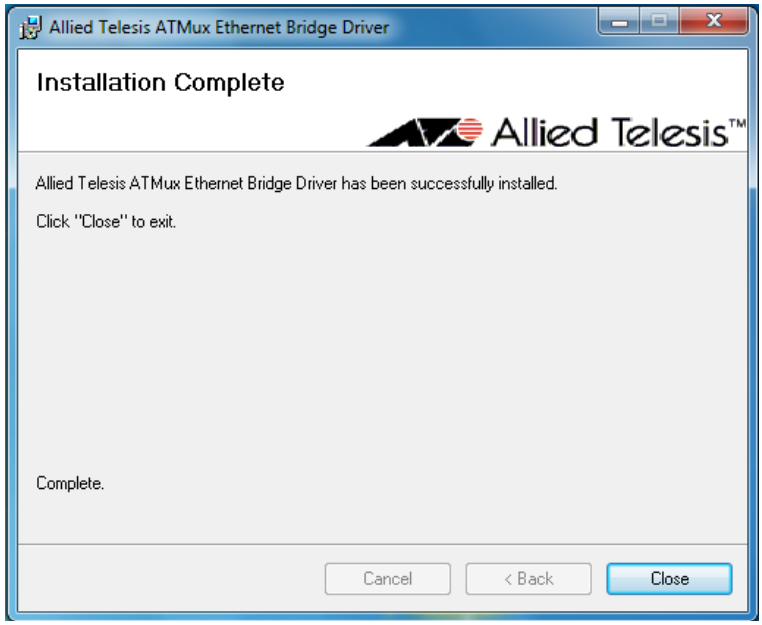


Figure 46. AT-MUX Setup Wizard 3

4. Click **Close**.

Accessing the AT-MUX Utility

To configure the AT-MUX utility, do the following:

> **Note**
> The procedures for accessing the AT-MUX utility are slightly different among Windows operating systems. The following instructions is for Windows 7 operating system to show an example.

1. Start your Windows operating system and log in.
2. Access Control Panel.

> **Note**
> The procedures for accessing Control Panel are slightly different among Windows operating systems. One common way is to left-click **Start** button and select **Control Panel** from **Start Menu.**

Figure 47 shows an example of Control Panel.

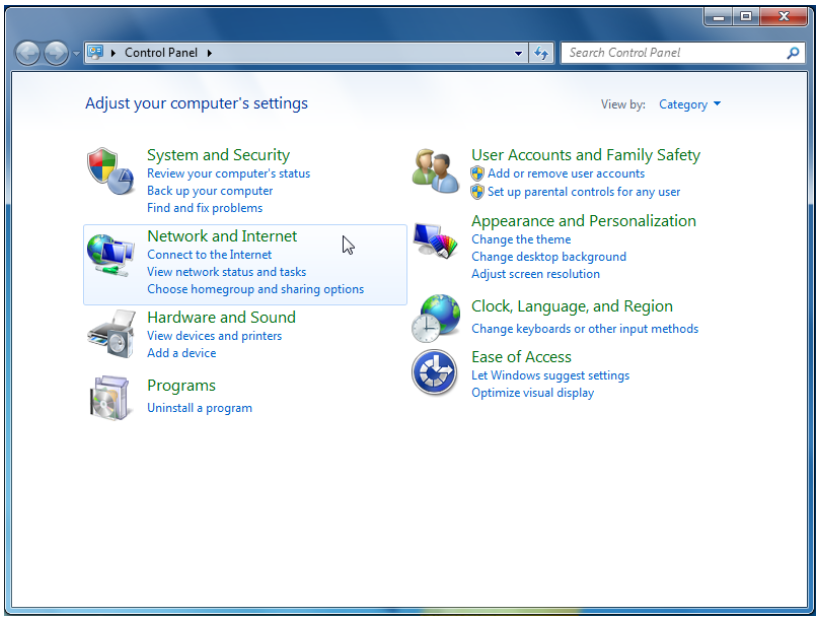


Figure 47. Control Panel

3. Select **Network and Internet**.

   Network and Internet appears as shown in Figure 48 on page 70.

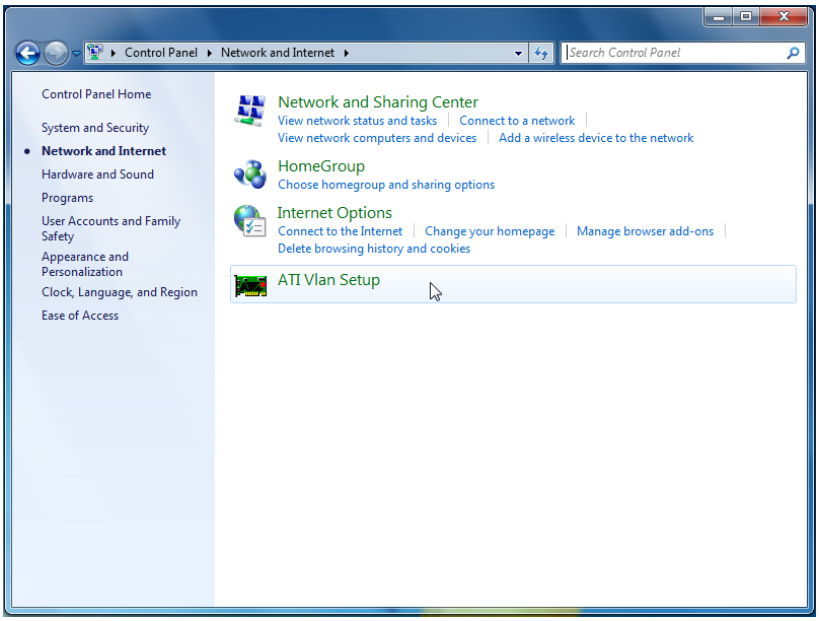


Figure 48. Network and Internet in Control Panel

4. Click **ATI Vlan Setup**.

   The AT-MUX utility starts as shown in Figure 49.

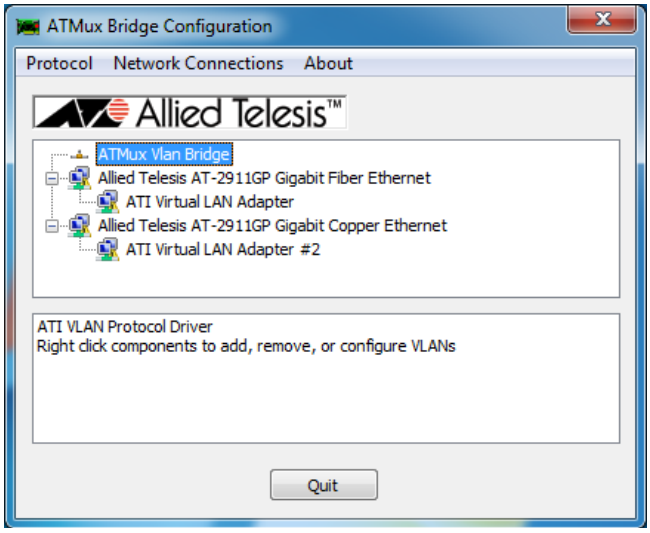


Figure 49. AT-MUX Utility

5. Click one of the **ATI Virtual LAN Adapter** entries.

   The Vlan Settings windows pops up as shown in Figure 50 on page 71.

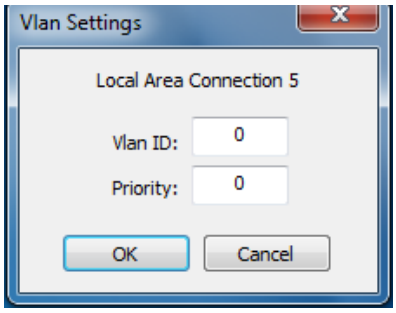


Figure 50. AT-MUX Vlan Settings

6. Specify the Vlan ID and Priority.
   - **Vlan ID—** The range is from 0 to 4055.
   - **Priority —** The range is from 0 to 7.
7. Click **OK**.
8. Repeat step 5 to step 7 on the other **ATI Virtual LAN Adapter** entry.

Note
The fiber port and copper port have separate VLAN ID and Property settings.

Uninstalling the AT-MUX Utility

If you want to use the copper port on the AT-2911GP adapter as a regular network port, you must uninstall the AT-MUX utility.

To uninstall the AT-MUX utility from your operating system, do the following:

> **Note**
> The procedures for uninstalling a program are slightly different among Windows operating systems. The following instructions is to uninstall the AT-MUX utility on Windows 7 operating system to show an example.

1. Start your Windows operating system and log in.
2. Access Control Panel.

   See step 2 in the Accessing the MUX Utility section.

   Control Panel appears as shown in Figure 52.

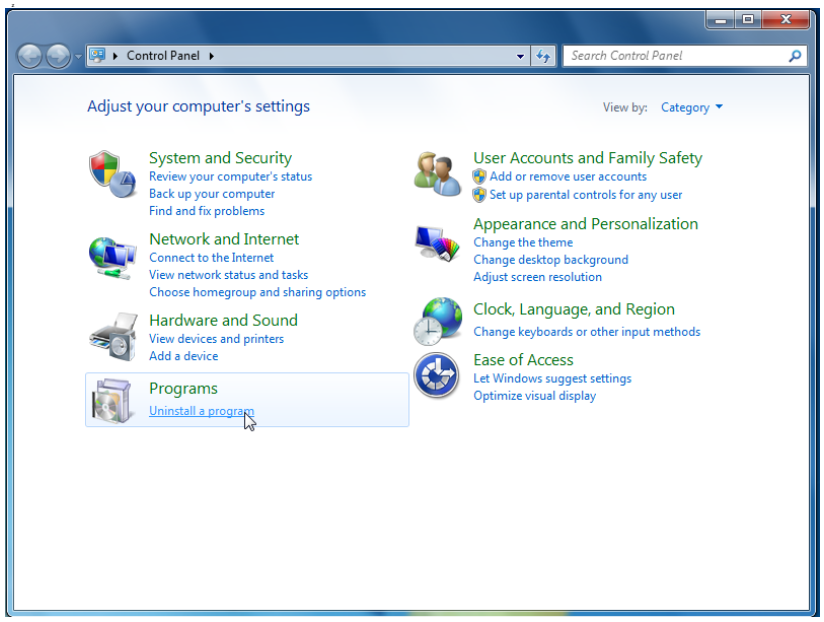


Figure 51. Control Panel

3. Select **Uninstall a program** under Programs.

   Control Panel lists programs to uninstall as shown in Figure 52 on page 73.

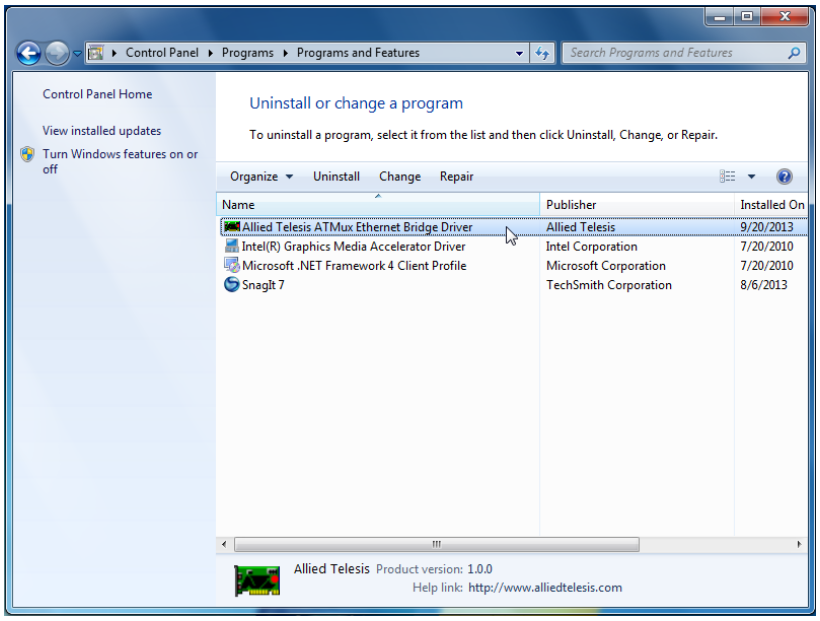


Figure 52. Control Panel - Programs and Features

4. Double-click **Allied Telesis ATMux Ethernet Bridge Driver**.

   A confirmation window pops up as shown in Figure 53.

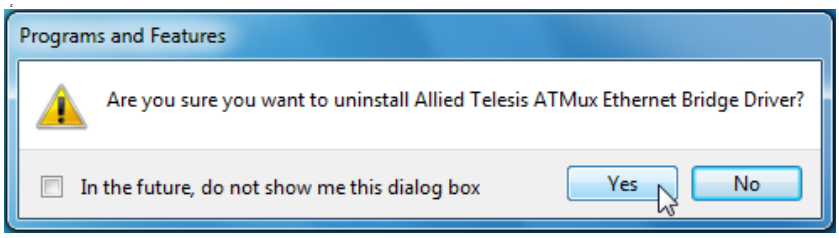


Figure 53. Uninstall Confirmation Window

5. Click **Yes**.

Chapter 5

Configuring a VoIP Phone System

This chapter describes how to configure a VoIP phone system using AT-2911GP adapters. It contains the following topics:

- “Overview” on page 76
- “Configuring VLAN Tagging on Adapter Ports” on page 77

Overview

The AT-2911GP adapter card is installed on a PC and connects the PC to the Ethernet network through the fiber optic port and a Powered Device (PD) through the PoE+ copper port. A PD is a device powered through an Ethernet cable by a Power Supply Equipment (PSE). A PC with the AT-2911GP adapter card is a PSE; a VoIP phone, Wi-Fi access point, and security camera are PD's. Figure 54 illustrates the configuration of PC's and VoIP phones as an example using the AT-2911GP adapter cards.

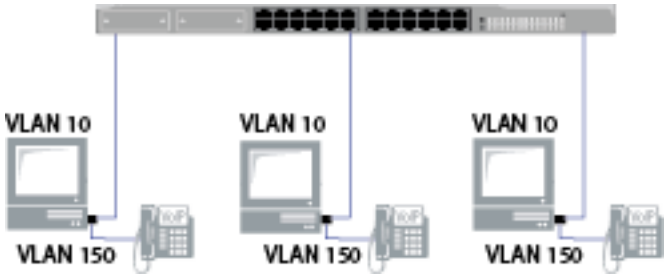


Figure 54. VoIP Phone Configuration Example

When you connect VoIP phones to your network through PC's, you must separate voice traffic from data traffic using VLAN because voice traffic must have higher priority over other types of traffic.

The AT-MUX utility allows you to assign a VLAN ID to the fiber and copper ports and bridges frames from the copper port to the fiber port.

For example, you assign the VLAN ID 150 to the copper port and the VLAN ID 10 to the fiber port. Frames from the copper port are tagged with the VLAN ID 150. When the copper port does not have a VLAN ID assigned, frames from the copper port remain untagged when they arrive at the switch. For more tagging examples, See "Configuring VLAN Tagging on Adapter Ports" on page 77.

To assign a VLAN ID to the copper and fiber ports, see "Accessing the AT-MUX Utility" on page 69.

Before you configure the AT-MUX for your VoIP phones, you must do the following tasks:

- Install the AT-2911GP adapter onto your PC. See Chapter 2, "Installing the Hardware" on page 23.
- Install the driver software onto your Windows operating system. See Chapter 3, "Installing the Driver Software" on page 35.
- Install The AT-MUX utility onto your Windows operating system. See Chapter 4, "Installing the AT-MUX Utility" on page 63.

Configuring VLAN Tagging on Adapter Ports

To separate voice traffic coming from the VoIP phone from data traffic from the PC, several combinations of VLAN tagging settings are possible.

VLAN Tagging Combinations

Figure 55 illustrates possible VLAN tagging combinations. In this example, voice frames belong to the VLAN 150 and data frames belong to the VLAN 10.

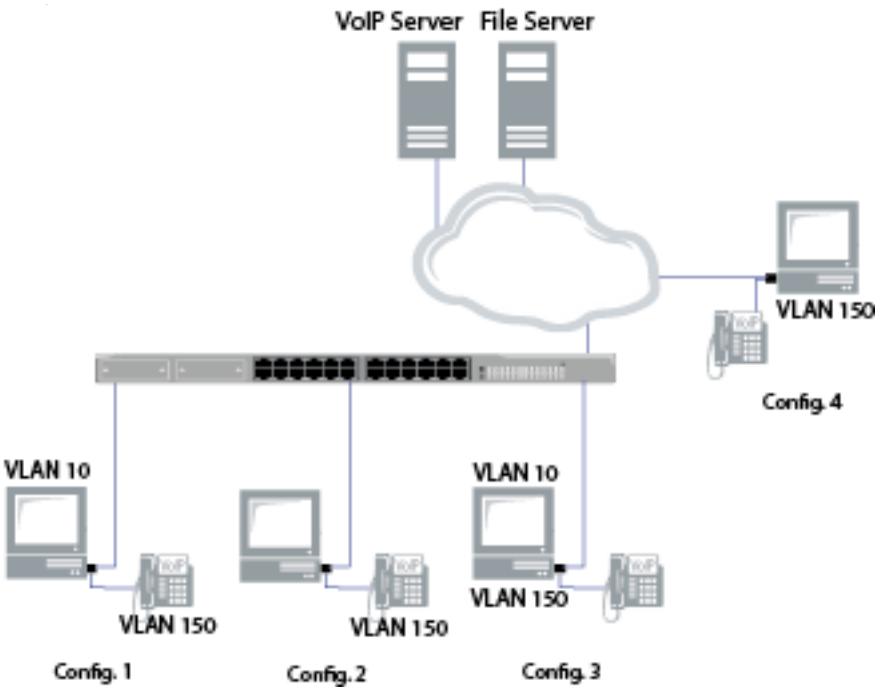


Figure 55. VoIP Phone Tagging Example

Table 3 shows VLAN tagging combinations.

Table 3. VLAN Tagging Combinations

	Config.1	Config. 2	Config. 3	Config. 4	Config. 5	Config. 6
VoIP Phone (in Phone setting)	VLAN tag (VID: 150)	VLAN tag (VID: 150)	-	-	-	-
Copper Port	-	-	VLAN tag (VID: 150)	VLAN tag (VID: 150)	-	-
Fiber Port	VLAN tag (VID: 10)	-	VLAN tag (VID: 10)	-	VLAN tag (VID: 10)	-

Using VLAN-Capable VoIP Phones

Some VoIP phones are capable of VLAN tagging. Config 1 and Config 2 are using VLAN-capable VoIP phones. If your VoIP phone is VLAN capable, assigns the VLAN ID 150 to a VoIP phone setting. Voice frames get the VLAN tagged at the phone, are sent to the copper port, and transmitted to the switch through the fiber port. The voice frames are unchanged through the fiber port.

You can assign a VLAN ID to the fiber port; however, when voice frames are tagged at the VoIP phone, do not assign a VLAN ID to the copper port.

Using VLAN-Incapable VoIP Phones

Config 3 and Config 4 are using non VLAN-capable phones. When the VoIP phone is not capable of VLAN tagging, you can assign the VLAN ID 150 to the copper port. Voice frames from the VoIP phone get tagged when they arrive at the copper port, are sent to the switch through the fiber port. The voice frames are unchanged through the fiber port.

Other Combinations

You can assign a VLAN ID only to the fiber port as with Config 5 in Table 3 on page 77. In addition, you can leave the fiber port, copper port, and VoIP phone untagged as with Config 6.

Chapter 6

Modifying Advanced Properties

This chapter includes the following topics:

- “Overview” on page 81
- “Supported Advanced Properties” on page 82
- “Accessing Advanced Properties” on page 87
- “802.1p QOS” on page 89
- “802.3az EEE” on page 90
- “ARP Offload” on page 91
- “Checksum Offload” on page 92
- “EEE Control Policies” on page 94
- “Ethernet@WireSpeed” on page 96
- “Flow Control” on page 97
- “Interrupt Moderation” on page 99
- “IPv4 Checksum Offload” on page 100
- “Jumbo Mtu” on page 101
- “Large Send Offload” on page 102
- “Large Send Offload (IPv4)” on page 103
- “Large Send Offload v2 (IPv4)” on page 105
- “Large Send Offload v2 (IPv6)” on page 107
- “Locally Administered Address” on page 108
- “Network Address” on page 110
- “NS Offload” on page 112
- “Priority & VLAN” on page 113
- “Receive Buffers” on page 115
- “Receive Side Scaling” on page 116
- “Maximum Number of RSS Queues” on page 117
- “RSS Queues” on page 118
- “Speed & Duplex” on page 119
- “TCP/UDP Checksum Offload (IPv4)” on page 120
- “TCP/UDP Checksum Offload (IPv6)” on page 122
- “Transmit Buffers” on page 124

- ❒ "Virtual Machine Queues" on page 125
- ❒ "VLAN ID" on page 126
- ❒ "VMQ VLAN Filtering" on page 127
- ❒ "Wake Up Capabilities" on page 128
- ❒ "Wake on Magic Packet" on page 130
- ❒ "Wake on Pattern Match" on page 131
- ❒ "WOL Speed" on page 132

Overview

The AT-2911GP adapter ports allow you to modify advanced properties to meet your requirements. To access the advanced properties, access Device Manager, then go to each advanced property page.

Guidelines

Here are the guidelines to modifying the advanced properties:

- To change the advanced property settings, you must have Administrator privileges.
- When you upgrade the driver software, the settings of the advanced properties may change. Verify the settings after upgrading the driver software.

Supported Advanced Properties

The supported advanced properties depend upon the driver version, interface, and the operating system that the adapter is installed on.

Windows XP and Server 2003

Table 4 shows lists of supported advanced properties for fiber and copper interfaces when the adapter is installed on Windows XP or Windows Server 2003. Driver software version 15.2.0.4 is available for Windows XP and Windows Server 2003.

Table 4. Advanced Properties for Windows XP and Server 2003

Advanced Property	Windows XP and Server 2003	
	v. 15.2.0.4	
	Fiber	Copper
"802.1p QOS" on page 89	X	X
"802.3az EEE" on page 90	X	X
"Checksum Offload" on page 92	X	X
"EEE Control Policies" on page 94	X	X
"Ethernet@WireSpeed" on page 96	X	X
"Flow Control" on page 97	X	X
"Jumbo Mtu" on page 101	X	X
"Large Send Offload" on page 102	X	X
"Locally Administered Address" on page 108	X	X
"Receive Buffers" on page 115	X	X
"Speed & Duplex" on page 119	X	X
"Transmit Buffers" on page 124	X	X
"Wake Up Capabilities" on page 128	X	X
"WOL Speed" on page 132	X	X

Windows Vista and Server 2008

Table 5 shows lists of supported advanced properties when the adapter is installed on Windows Vista or Windows Server 2008. Driver software versions 15.2.0.5 and 15.6.0.3 are available for Windows Vista and Windows Server 2008.

Table 5. Advanced Properties for Windows Vista and Server 2008

Advanced Property	Windows Vista and Server 2008			
	v. 15.2.0.5		v. 15.6.0.3	
	Fiber	Copper	Fiber	Copper
“802.3az EEE” on page 90	X	X	X	X
“EEE Control Policies” on page 94	X	X	X	X
“Ethernet@WireSpeed” on page 96	X	X	X	X
“Flow Control” on page 97	X	X	X	X
“Interrupt Moderation” on page 99	X	X	X	X
“IPv4 Checksum Offload” on page 100	X	X		
“Jumbo Mtu” on page 101	X	X	X	X
“Large Send Offload (IPv4)” on page 103	X	X		
“Large Send Offload v2 (IPv4)” on page 105	X	X	X	X
“Large Send Offload v2 (IPv6)” on page 107	X	X	X	X
“Network Address” on page 110	X	X	X	X
“Priority & VLAN” on page 113	X	X	X	X
“Receive Buffers” on page 115	X	X	X	X
“Receive Side Scaling” on page 116	X	X	X	X
“RSS Queues” on page 118	X	X		
“Maximum Number of RSS Queues” on page 117			X	X
“Speed & Duplex” on page 119	X	X	X	X
“TCP/UDP Checksum Offload (IPv4)” on page 120	X	X	X	X
“TCP/UDP Checksum Offload (IPv6)” on page 122	X	X	X	X
“Transmit Buffers” on page 124	X	X	X	X
“VLAN ID” on page 126	X	X	X	X
“Wake Up Capabilities” on page 128		X		
“Wake on Magic Packet” on page 130			X	X
“Wake on Pattern Match” on page 131			X	X
“WOL Speed” on page 132		X	X	X

Windows 7 and Server 2008 R2

Table 6 shows lists of supported advanced properties when the adapter is installed on Windows 7 or Windows Server 2008 R2. Driver software versions 15.2.0.5 and 15.6.0.3 are available for Windows 7 and Windows Server 2008 R2.

Note
The Virtual Machine Queues and VMQ VLAN Filtering properties are not supported in Windows 7 32-bit version.

Table 6. Advanced Properties for Windows 7 and Server 2008 R2

Advanced Property	Windows 7 and Server 2012			
	v. 15.2.0.5		v. 15.6.0.3	
	Fiber	Copper	Fiber	Copper
"802.3az EEE" on page 90	X	X	X	X
"ARP Offload" on page 91	X	X	X	X
"EEE Control Policies" on page 94	X	X	X	X
"Ethernet@WireSpeed" on page 96	X	X	X	X
"Flow Control" on page 97	X	X	X	X
"Interrupt Moderation" on page 99	X	X	X	X
"IPv4 Checksum Offload" on page 100	X	X		
"Jumbo Mtu" on page 101	X	X	X	X
"Large Send Offload (IPv4)" on page 103	X	X		
"Large Send Offload v2 (IPv4)" on page 105	X	X	X	X
"Large Send Offload v2 (IPv6)" on page 107	X	X	X	X
"Network Address" on page 110	X	X	X	X
"NS Offload" on page 112	X	X	X	X
"Priority & VLAN" on page 113	X	X	X	X
"Receive Buffers" on page 115	X	X	X	X
"Receive Side Scaling" on page 116	X	X	X	X
"RSS Queues" on page 118	X	X		
"Maximum Number of RSS Queues" on page 117			X	X
"Speed & Duplex" on page 119	X	X	X	X

Table 6. Advanced Properties for Windows 7 and Server 2008 R2 (Continued)

Advanced Property	Windows 7 and Server 2012			
	v. 15.2.0.5		v. 15.6.0.3	
	Fiber	Copper	Fiber	Copper
“TCP/UDP Checksum Offload (IPv4)” on page 120	X	X	X	X
“TCP/UDP Checksum Offload (IPv6)” on page 122	X	X	X	X
“Transmit Buffers” on page 124	X	X	X	X
“Virtual Machine Queues” on page 125 *	X	X	X	X
“VLAN ID” on page 126	X	X	X	X
“VMQ VLAN Filtering” on page 127 *	X	X	X	X
“Wake Up Capabilities” on page 128		X		
“Wake on Magic Packet” on page 130			X	X
“Wake on Pattern Match” on page 131			X	X
“WOL Speed” on page 132		X	X	X

* the property is not supported in Windows 7 32-bit version.

Windows 8 and Server 2012

Table 7 shows lists of supported advanced properties when the adapter is installed on Windows 8 or Windows Server 2012. Driver software version 15.6.0.3 is available for Windows 8 and Windows Server 2012.

Note
The Virtual Machine Queues and VMQ VLAN Filtering properties are not supported in Windows 8 32-bit version.

Table 7. Advanced Properties for Windows Server 2008 R2

Advanced Property	Windows 8 and Server 2012	
	v. 15.6.0.3	
	Fiber	Copper
“802.3az EEE” on page 90	X	X
“ARP Offload” on page 91	X	X
“EEE Control Policies” on page 94	X	X

Table 7. Advanced Properties for Windows Server 2008 R2 (Continued)

Advanced Property	Windows 8 and Server 2012	
	v. 15.6.0.3	
	Fiber	Copper
"Ethernet@WireSpeed" on page 96	X	X
"Flow Control" on page 97	X	X
"Interrupt Moderation" on page 99	X	X
"Jumbo Mtu" on page 101	X	X
"Large Send Offload v2 (IPv4)" on page 105	X	X
"Large Send Offload v2 (IPv6)" on page 107	X	X
"Network Address" on page 110	X	X
"NS Offload" on page 112	X	X
"Priority & VLAN" on page 113	X	X
"Receive Buffers" on page 115	X	X
"Receive Side Scaling" on page 116	X	X
"Maximum Number of RSS Queues" on page 117	X	X
"Speed & Duplex" on page 119	X	X
"TCP/UDP Checksum Offload (IPv4)" on page 120	X	X
"TCP/UDP Checksum Offload (IPv6)" on page 122	X	X
"Transmit Buffers" on page 124	X	X
"Virtual Machine Queues" on page 125 *	X	X
"VLAN ID" on page 126	X	X
"VMQ VLAN Filtering" on page 127 *	X	X
"Wake on Magic Packet" on page 130	X	X
"Wake on Pattern Match" on page 131	X	X
"WOL Speed" on page 132	X	X

* the property is not supported in Windows 8 32-bit version.

Accessing Advanced Properties

To modify advanced properties, first access Device Manager, open the properties of your adapter interface, and select a feature you want to change its setting.

1. To access the Device Manager, follow one of these procedures:

   - “Accessing Device Manager on Windows Server 2003 or Windows XP” on page 42
   - “Accessing Device Manager on Windows Server 2008, Windows Vista, or Windows 7” on page 41
   - “Accessing Device Manager on Windows Server 2012 or Windows 8” on page 39

2. In the Device Manager window, double-click **Allied Telesis AT-2911GP Gigabit Fiber Ethernet** or **Allied Telesis AT-2911GP Gigabit Copper Ethernet**.

   The properties window pops up as shown in Figure 56.

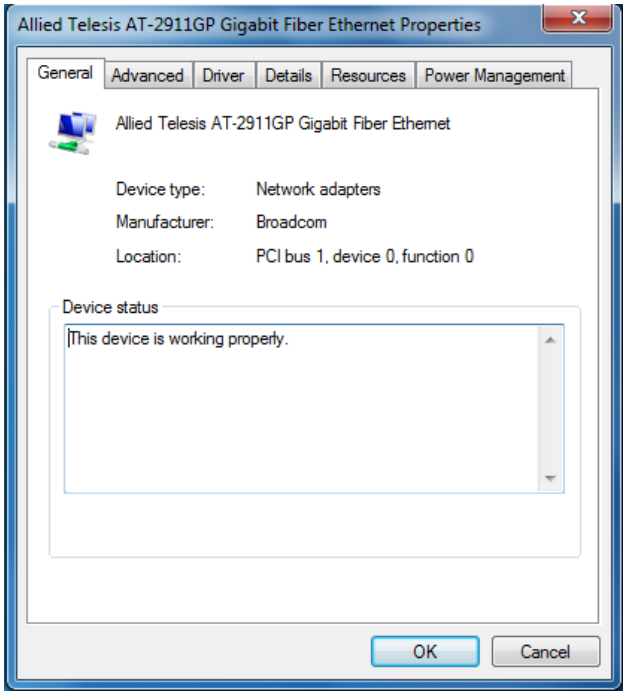


Figure 56. Properties Window

3. Click the **Advanced** tab.

   The Advanced Properties window opens as shown in Figure 57.

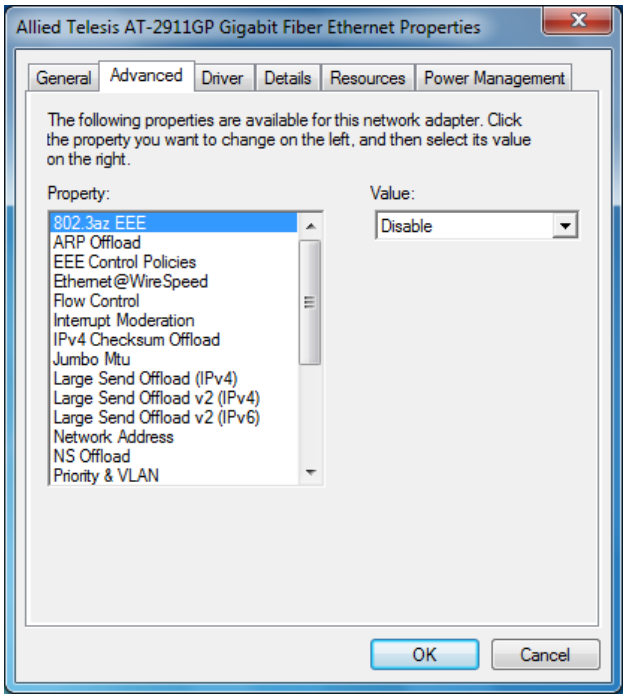


Figure 57. Advanced Properties Window

802.1p QOS

The 802.1p QOS property allows you to enable or disable the Quality of Service (QoS) feature on the adapter. QoS is a network standard for managing traffic by assigning priority to packets.

> **Note**
> Enable the 802.1p QOS property only when the network supports QoS.

To enable or disable the 802.1p QOS feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **802.1p QOS** in the Property box.

   The 802.1p QOS page is displayed as shown in Figure 58.

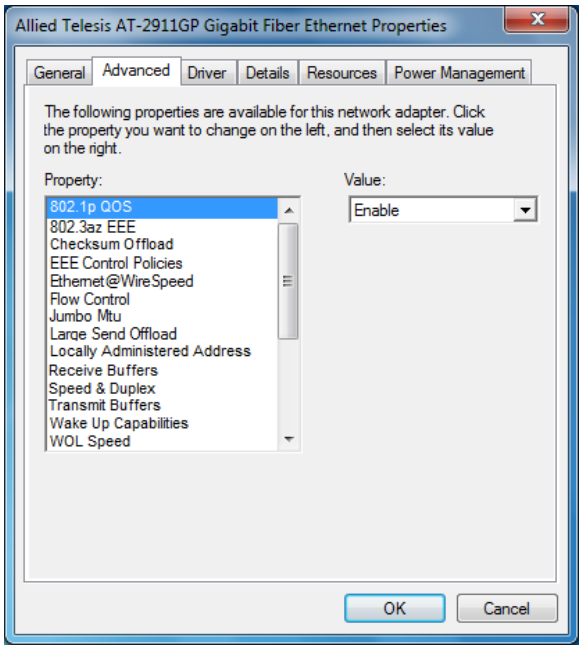


Figure 58. 802.1p QOS Page

3. Select one of the following options:

   - **Disable —** The 802.1p QOS feature is disabled. This is the default setting.
   - **Enable —** The 802.1p QOS feature is enabled.

4. Click **OK**.

802.3az EEE

The 802.3az EEE (Energy Efficient Ethernet) property allows you to optimize the energy usage of a copper interface over Ethernet.

To enable or disable the 802.3az EEE feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **802.3az EEE** in the Property box.

   The 802.3az EEE page is displayed as shown in Figure 59.

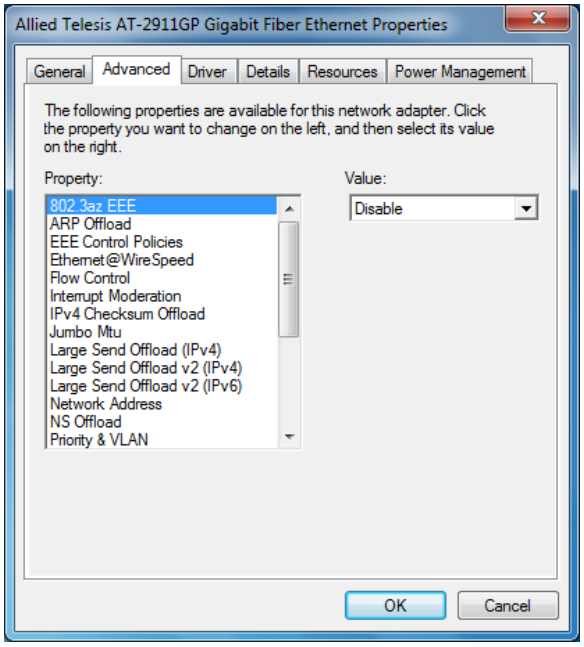


Figure 59. 802.3az EEE Page

3. Select one of the following options if available:

   Note
   The options and default setting depend on your operating system and the version of the driver that you installed.

   - **Disable —** The 802.3az EEE feature is disabled. This is the default setting.
   - **Enable —** The 802.3az EEE feature is enabled.

4. Click **OK**.

ARP Offload

The ARP Offload feature enables the adapter not to wake up when responding to an ARP request. ARP is used to verify whether a computer is still present on the network and resolute an IP address into a MAC address.

To enable or disable the ARP Offload feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **ARP Offload** in the Property box.

   The ARP Offload page is displayed as shown in Figure 60.

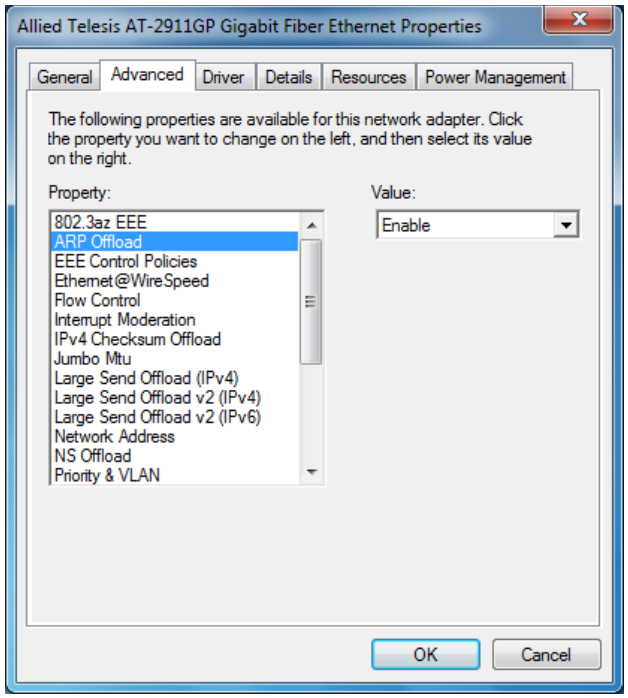


Figure 60. ARP Offload Page

3. Select one of the following options:

   - **Disable —** This feature is disabled.
   - **Enable —** The adapter does not wake up when responding to an ARP request. This is the default setting.

4. Click **OK**.

Checksum Offload

The Checksum Offload feature allows the adapter to verify the TCP/IP checksum to enhance receive and transmit performance and reduce CPU utilization.

To enable or disable the Checksum Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Checksum Offload** in the Property box.

   The Checksum Offload page is displayed as shown in Figure 61.

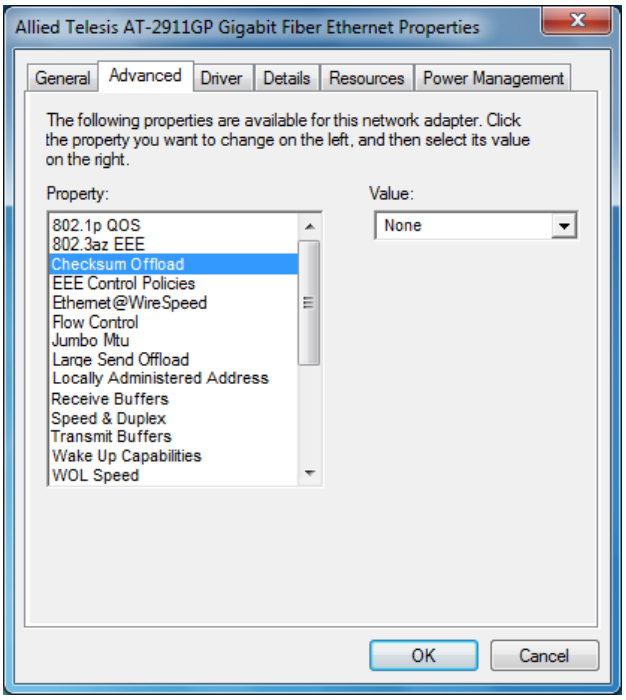


Figure 61. Checksum Offload Page

3. Select one of the following options:

   - **None —** The TCP/IP checksum feature is disabled.
   - **Rx TCP/IP Checksum —** The adapter verifies TCP/IP checksum only for receiving packets.
   - **Tx TCP/IP Checksum —** The adapter verifies TCP/IP checksum only for transmitting packets.
   - **Tx/Rx TCP/IP Checksum —** The adapter verifies Checksum for both receiving and transmitting packets. This is the default setting.

4. Click **OK**.

EEE Control Policies

The EEE (Energy-Efficient Ethernet) Control Policies feature enables the adapter to manage power for the best performance.

To change the setting of the EEE Control Policies feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **EEE Control Policies** in the Property box.

   The EEE Control Policies page is displayed as shown in Figure 62.

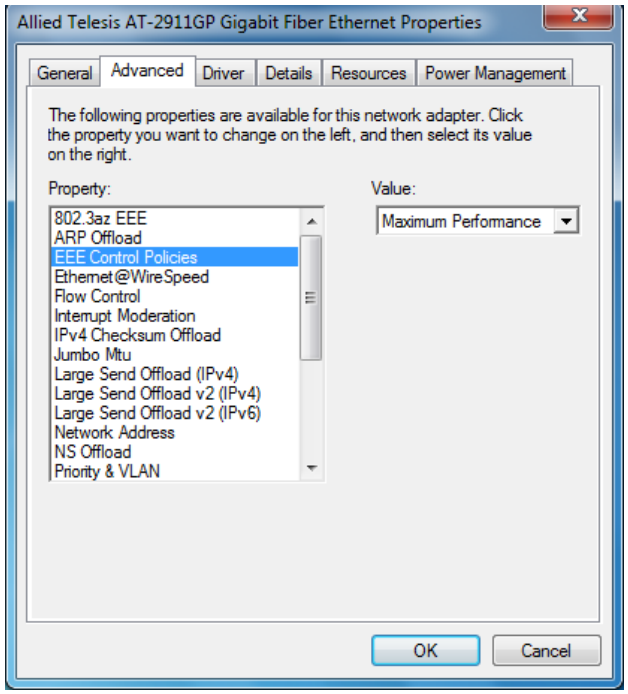


Figure 62. EEE Control Policies Page

3. Select one of the following options if available:

   Note
   The options and default setting depend on your operating system and the version of the driver that you installed.

   - **Optimal Power and Performance —** The adapter manages the best trade-off between energy efficiency and performance.
   - **Maximum Performance —** The adapter manages power for the best performance.

- **Maximum Power Saving —** The adapter manages power for the best energy saving.

4. Click **OK**.

Ethernet@WireSpeed

The Ethernet@WireSpeed feature connects two gigabit devices even when the devices are connected through an impaired copper cable.

To view the Ethernet@WireSpeed setting, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Ethernet@WireSpeed** in the Property box.

   The Ethernet@WireSpeed page is displayed as shown in Figure 63.

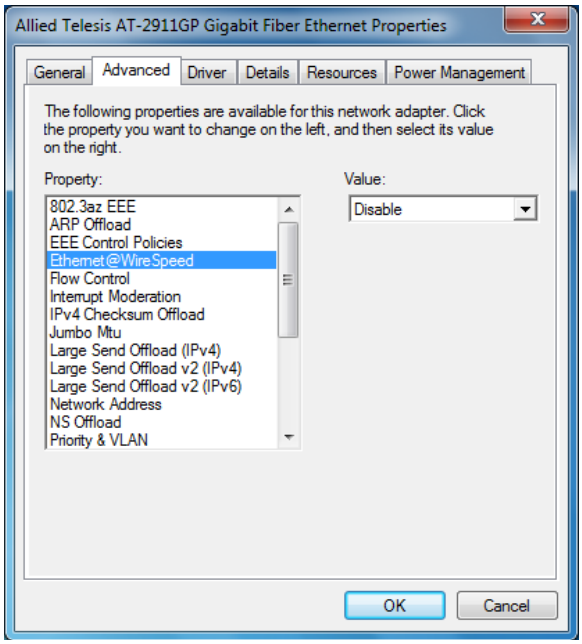


Figure 63. Ethernet@WireSpeed Page

3. Select one of the following options if available:

   Note
   The options and default setting depend on your operating system and the version of the driver that you installed.

   - **Disable —** The Ethernet@WireSpeed feature is disabled
   - **Enable —** The Ethernet@WireSpeed feature is enabled.

4. Click **OK**.

Flow Control

The Flow Control feature allows you to control the flow between the AT-2911GP adapter port and its link partner. You can enable or disable the adapter port to process received PAUSE frames and transmit PAUSE frames.

To enable or disable the Flow Control feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Flow Control** in the Property box.

   The Flow Control page is displayed as shown in Figure 64.

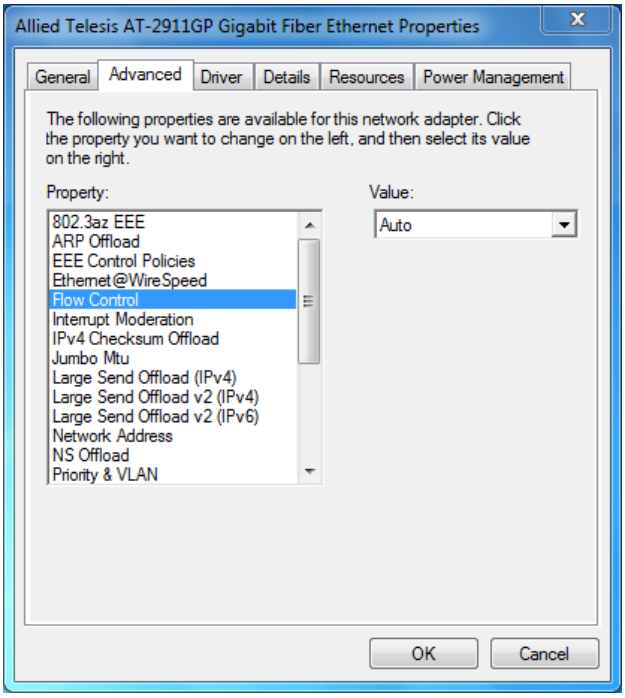


Figure 64. Flow Control Page

3. Select one of the following options if available:

   Note
   The options and default setting depend on your operating system and the version of the driver that you installed.

   - **Auto —** Receiving and transmitting PAUSE frames are optimized.
   - **Disabled —** The adapter ignores PAUSE frames.

- **Tx & Rx Enabled (Tx/Rx PAUSE) —** The adapter processes PAUSE frames when receiving and transmits PAUSE frames.
- **Rx Enabled (Rx PAUSE) —** The adapter processes PAUSE frames when receiving, but does not transmit PAUSE frame.
- **Tx Enabled (Tx PAUSE) —** The adapter transmits PAUSE frames, but ignores PAUSE frames when receiving.

4. Click **OK**.

Interrupt Moderation

The Interrupt Moderation feature allows you to limit the rate of interrupts to the CPU during packet transmission and packet reception. When this feature is enabled, interrupts are handled as a group so that the CPU utilization decreases; however, the latency may increase.

To enable or disable the Interrupt Moderation feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Interrupt Moderation** in the Property box.

   The Interrupt Moderation page is displayed as shown in Figure 65.

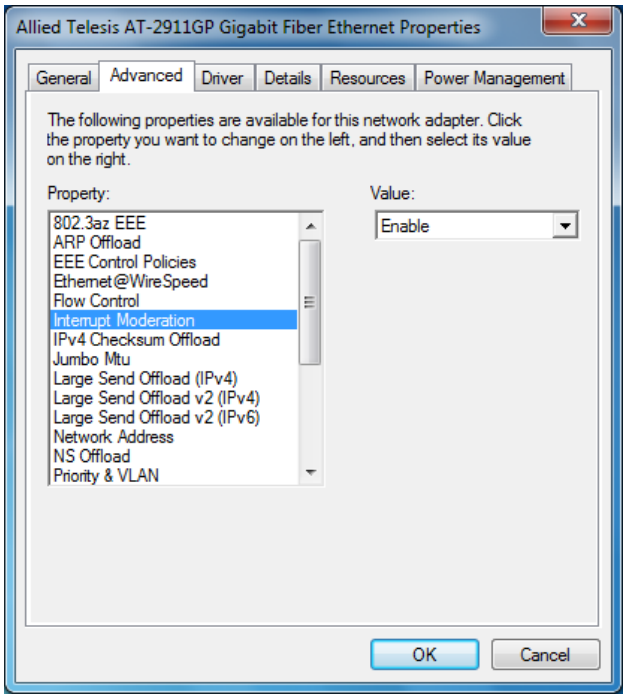


Figure 65. Interrupt Moderation Page

3. Select one of the following options:

   - **Disable —** The Interrupt Moderation feature is disabled
   - **Enable —** The Interrupt Moderation feature is enabled. This is the default setting.

4. Click **OK**.

IPv4 Checksum Offload

The IPv4 Checksum Offload feature allows the adapter to verify the IPv4 checksum to enhance IPv4 receive and transmit performance and reduce CPU utilization.

To enable or disable the IPv4 Checksum Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **IPv4 Checksum Offload** in the Property box.

   The IPv4 Checksum Offload page is displayed as shown in Figure 66.

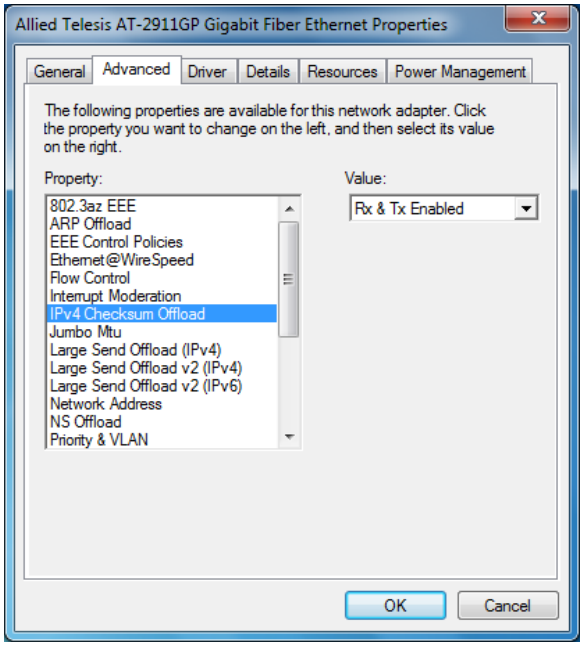


Figure 66. IPv4 Checksum Offload Page

3. Select one of the following options:

   - **Rx & Tx Enabled —** The adapter verifies IPv4 Checksum for both receiving and transmitting packets. This is the default setting.
   - **Disable —** The CPU verifies IPv4 checksum.
   - **Rx Enabled —** The adapter verifies IPv4 Checksum only for receiving packets.
   - **Tx Enabled —** The adapter verifies IPv4 Checksum only for transmitting packets.

4. Click **OK**.

Jumbo Mtu

The Jumbo Mtu (Maximum transmission unit) feature allows you to specify the size of the Ethernet frame that the adapter port supports. The network performance usually improves when the larger frame size is specified; however, the network must be capable of supporting the oversized Ethernet frames.

To change the Jumbo Mtu setting, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Jumbo Mtu** in the Property box.

   The Jumbo Mtu page is displayed as shown in Figure 67.

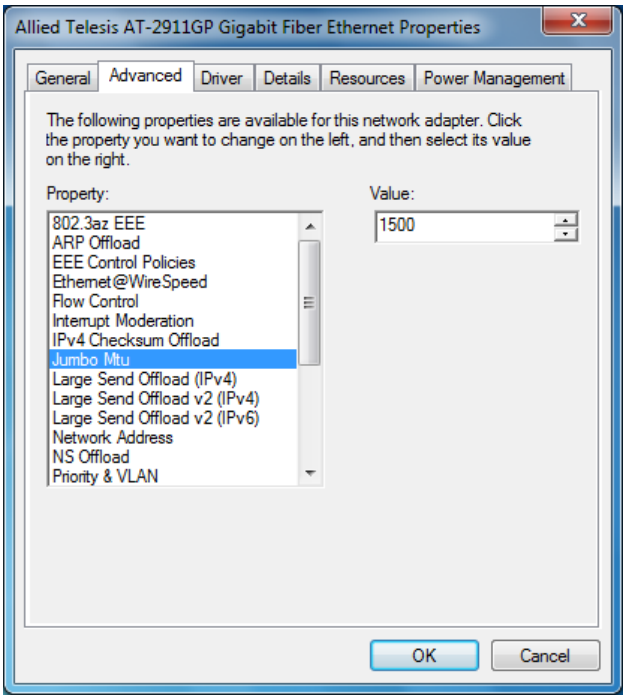


Figure 67. Jumbo Mtu Page

3. Specify the size of the frame in the Value box.

   The range of the value is from 1,500 to 9,000. The default value is 1,500.

4. Click **OK**.

Large Send Offload

The Large Send Offload feature allows you to control the load of sending out large packets. When this feature is enabled, the adapter segments large packets and reduces the CPU load.

To enable or disable the Large Send Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Large Send Offload** in the Property box.

   The Large Send Offload page is displayed as shown in Figure 68.

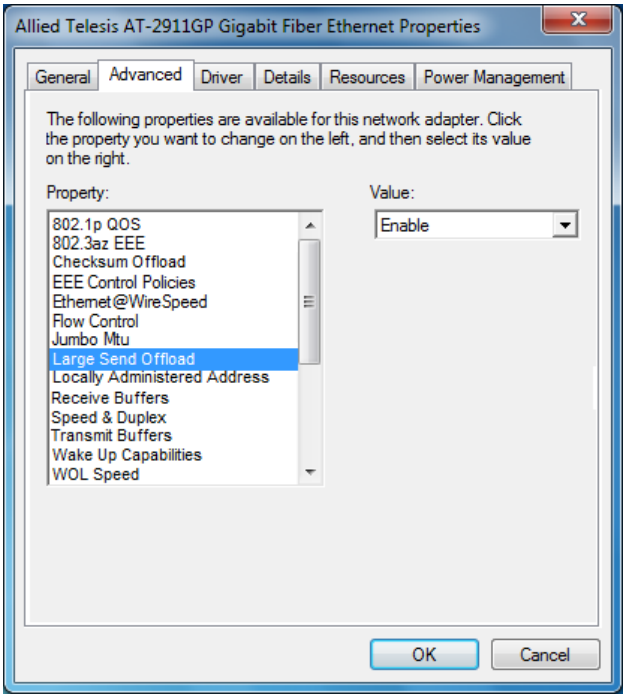


Figure 68. Large Send Offload Page

3. Select one of the following options:

   - **Disable —** The Large Send Offload feature is disabled.
   - **Enable —** The adapter segments large packets up to 64kb before sending them out. This is the default setting.

4. Click **OK**.

Large Send Offload (IPv4)

The Large Send Offload (IPv4) feature allows you to control the load of sending out large packets. When this feature is enabled, the adapter port segments large packets and reduces the CPU load.

The Large Send Offload (IPv4) feature supports large packets up to 64kb. The Large Send Offload v2 (IPv4), which supports large packets up to 256kb, overrides the Large Send Offload (IPv4) feature if both features are enabled. For more information, see “Large Send Offload v2 (IPv4)” on page 105.

To enable or disable the Large Send Offload (IPv4) feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Large Send Offload (IPv4)** in the Property box.

   The Large Send Offload (IPv4) page is displayed as shown in Figure 69.

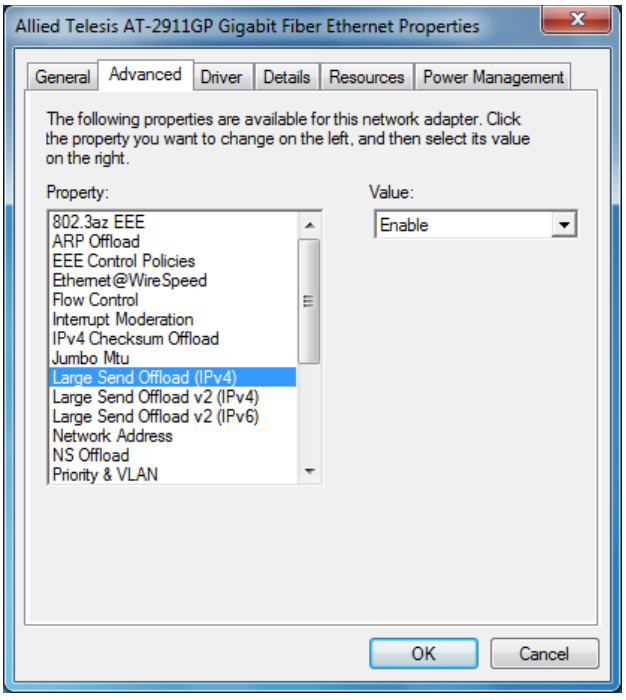


Figure 69. Large Send Offload (IPv4) Page

3. Select one of the following options:

   - **Disable —** This feature is disabled.
   - **Enable —** The adapter port segments large packets up to 64kb for IPv4 traffic before sending them out. This is the default setting.

4. Click **OK**.

Large Send Offload v2 (IPv4)

The Large Send Offload v2 (IPv4) feature allows you to control the load of sending out large packets. When this feature is enabled, the adapter port segments large packets for IPv4 traffic and reduces the CPU load.

This feature, which supports large packets up to 256kb, overrides the Large Send Offload (IPv4) feature if both features are enabled.

To enable or disable the Large Send Offload v2 (IPv4) feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Large Send Offload v2 (IPv4)** in the Property box.

   The Large Send Offload v2 (IPv4) page is displayed as shown in Figure 70.

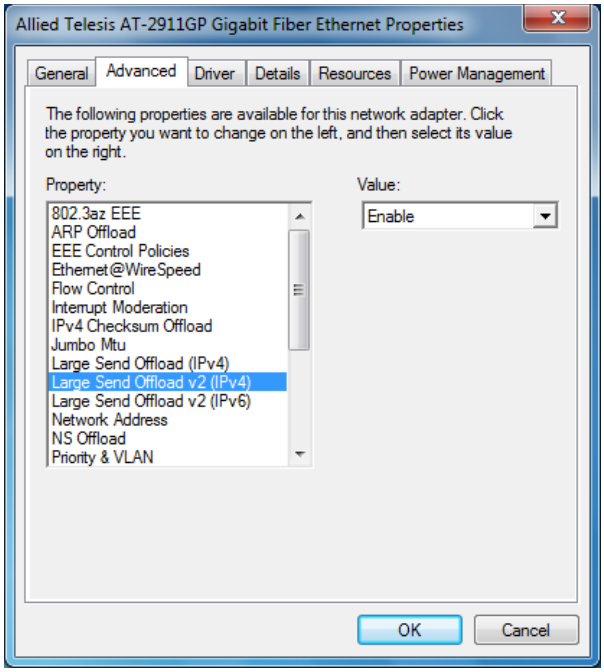


Figure 70. Large Send Offload v2 (IPv4) Page

3. Select one of the following options:

   - **Disable —** The feature is disabled.
   - **Enable —** The adapter port segments large packets up to 256kb for IPv4 traffic before sending them out. This is the default setting.

4. Click **OK**.

Large Send Offload v2 (IPv6)

The Large Send Offload v2 (IPv6) feature allows you to control the load of sending out large packets. When this feature is enabled, the adapter port segments large packets for IPv6 traffic and reduces the CPU load.

To enable or disable the Large Send Offload v2 (IPv6) feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Large Send Offload v2 (IPv6)** in the Property box.

   The Large Send Offload v2 (IPv6) page is displayed as shown in Figure 71.

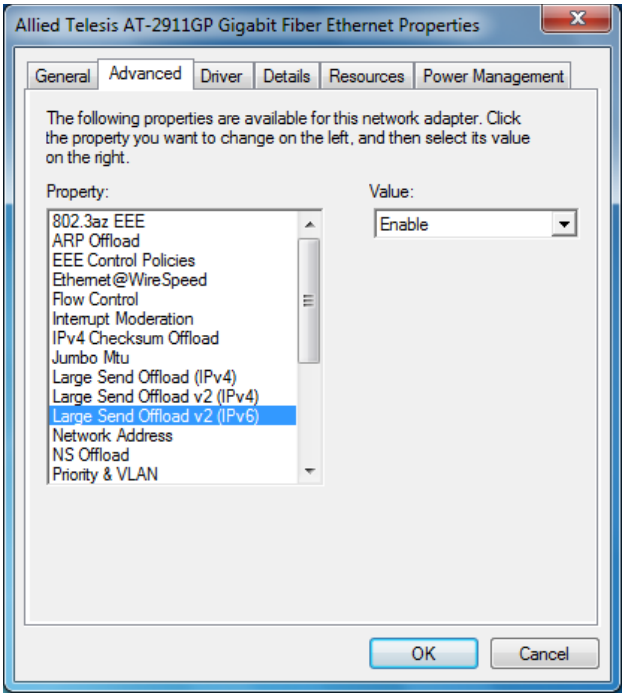


Figure 71. Large Send Offload (IPv6) Page

3. Select one of the following options:

   - **Disable —** The adapter does not segment packets for IPv6 traffic.
   - **Enable —** The adapter port segments large packets up to 256kb for IPv6 traffic before sending them out. This is the default setting.

4. Click **OK**.

Locally Administered Address

The Locally Administered Address allows you to replace the MAC address originally assigned to the adapter with a user-defined address. The user-defined address that you assign to the adapter is called a locally administered address.

Caution
A locally administered address overrides the original MAC address stored in the AT-2911GP series adapter card. When you change the MAC address, ensure that a unique MAC address is assigned.

Guidelines for Assigning a Locally Administered Address

Here are guidelines for assigning a locally administered address:

- The address must be unique.
- The address consists of a 12-digit hexadecimal number, for example, "020C46005501."
- The address must start with "02" in the most significant byte, for example, "020304050607."
- Do not assign "0000 0000 0000" or "FFFF FFFF FFFF."
- The range is from 0200 0000 0000 to 02FF FFFF FFFF.

Assigning the Locally Administered Address

To assign or change the Locally Administered Address, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Locally Administered Address** in the Property box.

   The Locally Administered Address page is displayed as shown in Figure 72 on page 109.

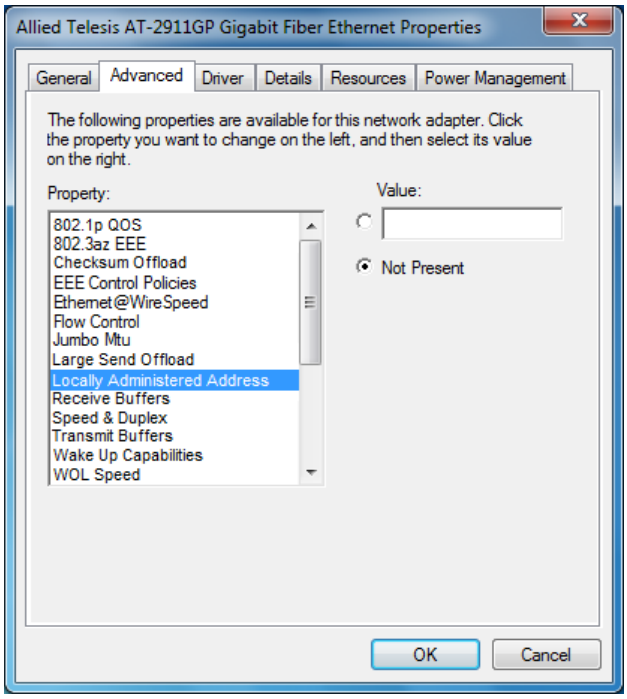


Figure 72. Locally Administered Address Page

3. In the **Value** text box, enter a locally administered address for the AT-2911GP adapter.

   By default, no locally administered address is assigned.

4. Click **OK**.

Network Address

The Network Address property allows you to replace the MAC address originally assigned to the adapter with a user-defined address. The user-defined address that you assign to the adapter is called a locally administered address.

Caution
The network address overrides the original MAC address stored in the AT-2911GP series adapter card. When you change the MAC address, ensure that a unique MAC address is assigned.

To assign or change the Network Address, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Network Address** in the Property box.

   The Network Address page is displayed as shown in Figure 73.

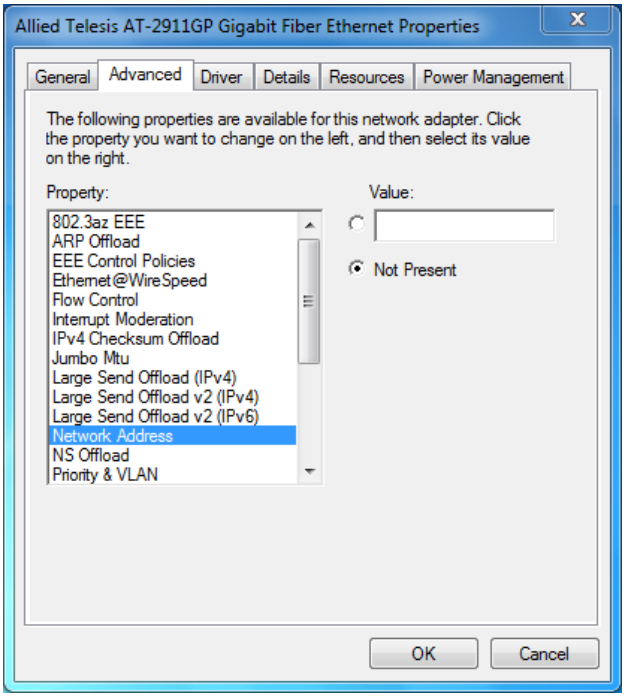


Figure 73. Network Address Page

3. In the **Value** text box, enter a locally administered address for the AT-2911GP adapter.

   By default, no locally administered address is assigned.

   For more information, see “Guidelines for Assigning a Locally Administered Address” on page 108.

4. Click **OK**.

NS Offload

The NS (Neighbor Solicitation) Offload feature enables the adapter not to wake up when responding to an NS request.

To enable or disable the NS Offload feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **NS Offload** in the Property box.

   The NS Offload page is displayed as shown in Figure 74.

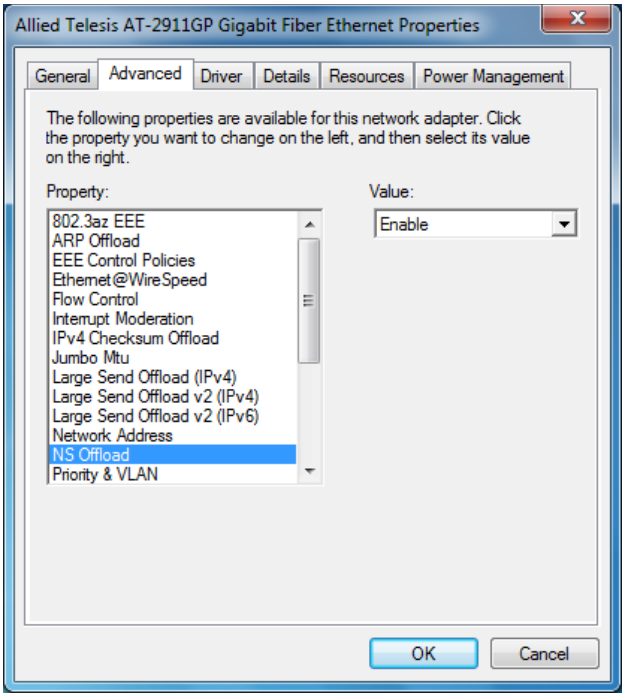


Figure 74. NS Offload Page

3. Select one of the following options:

   - **Disable —** This feature is disabled.
   - **Enable —** The adapter does not wake up when responding to an NS request. This is the default setting.

4. Click **OK**.

Priority & VLAN

The Priority & VLAN feature allows you to control sending and receiving tagged frames of QoS and VLAN.

> **Note**
> When you install the AT-MUX utility on your system to bridge frames from the copper port to the fiber port, set a priority and VLAN ID in the AT-MUX utility. See “Accessing the AT-MUX Utility” on page 69.

When the property is set to Priority & VLAN Enabled, the adapter sends and receives QoS and VLAN tagged frames; with Priority Enabled, the adapter sends and receives QoS tagged frames; with VLAN Enabled, the adapter sends and receives VLAN tagged frames. To assign a VLAN ID to the adapter, see “VLAN ID” on page 126.

To enable or disable the Priority & VLAN feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Priority & VLAN** in the Property box.

   The Priority & VLAN page is displayed as shown in Figure 75.

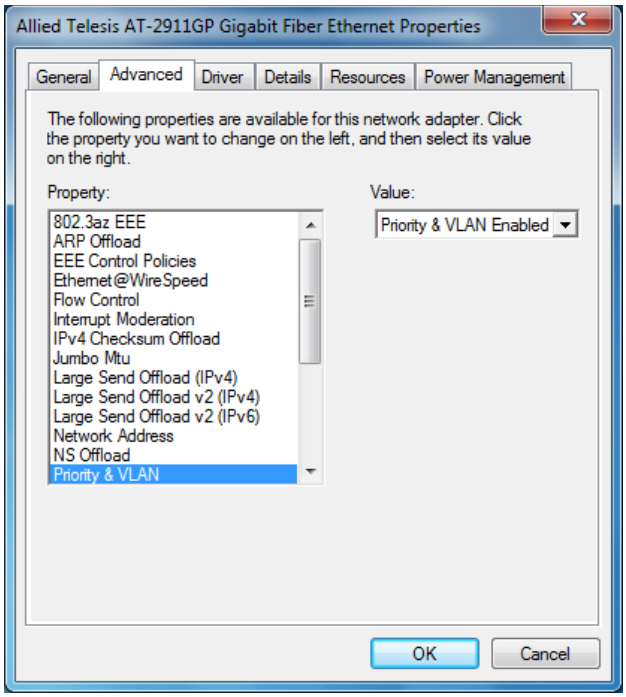


Figure 75. Priority & VLAN Page

3. Select one of the following options:

   - **Priority & VLAN Enabled —** The adapter sends and receives QoS and VLAN tagged frames. This is the default setting.
   - **Priority & VLAN Disabled —** The adapter does not send and ignores QoS and VLAN tagged frames.
   - **Priority Enabled —** The adapter sends and receives QoS tagged frames.
   - **VLAN Enabled —** The adapter sends and receives VLAN tagged frames.

4. Click **OK**.

Receive Buffers

The Receive Buffers property specifies the number of packet receive buffers allocated for the adapter port. Increasing this value may enhance performance in receiving traffic, but consumes more system memory.

To change the Receive Buffers value, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Receive Buffers** in the Property box.

   The Receive Buffers page is displayed as shown in Figure 76.

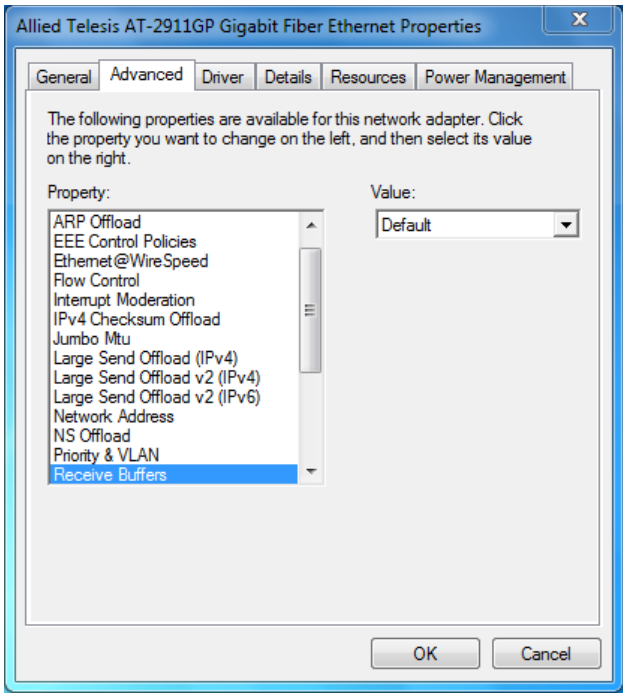


Figure 76. Receive Buffers Page

3. Select one of the following options:

   - **Default —** The default number of receive buffers is allocated. This is the default setting.
   - **Maximum —** The maximum number of receive buffers is allocated.
   - **Maximum —** The minimum number of receive buffers is allocated.

4. Click **OK**.

Receive Side Scaling

The Receive Side Scaling (RSS) feature allows the adapter to efficiently distribute receive processing across multiple CPU's and to prevent from overloading a single CPU. To make this feature effective, the computer must have multiple CPU's in a multiprocessor system.

To enable or disable the Receive Side Scaling feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Receive Side Scaling** in the Property box.

   The Receive Side Scaling page is displayed as shown in Figure 77.

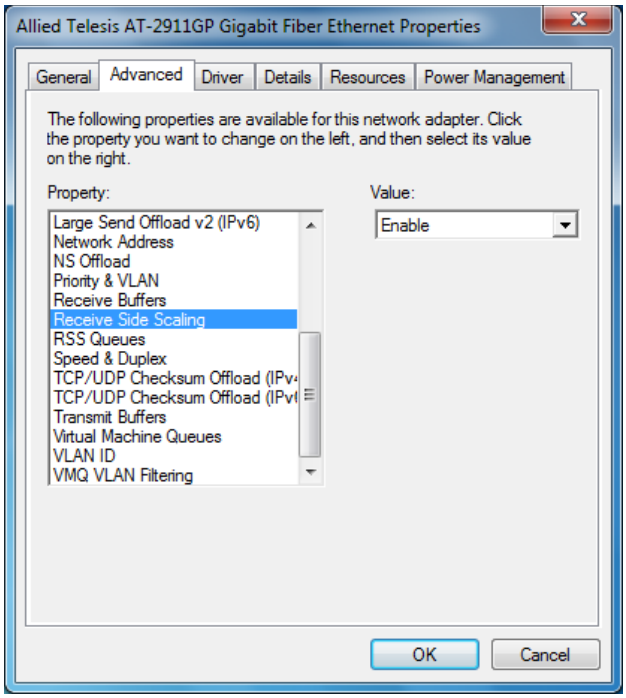


Figure 77. Receive Side Scaling Page

3. Select one of the following options:

   - **Enable —** Receiving data is processed by multiple CPU's. This is the default setting.
   - **Disable —** Receiving data is processed by a single CPU.

4. Click **OK**.

Maximum Number of RSS Queues

The Maximum Number of RSS Queues property allows you to specify the maximum number of RSS queues that the adapter assigns receiving data to.

To Specify the Maximum Number of RSS Queues, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Maximum Number of RSS Queues** in the Property box.

   The Maximum Number of RSS Queues page is displayed as shown in Figure 78.

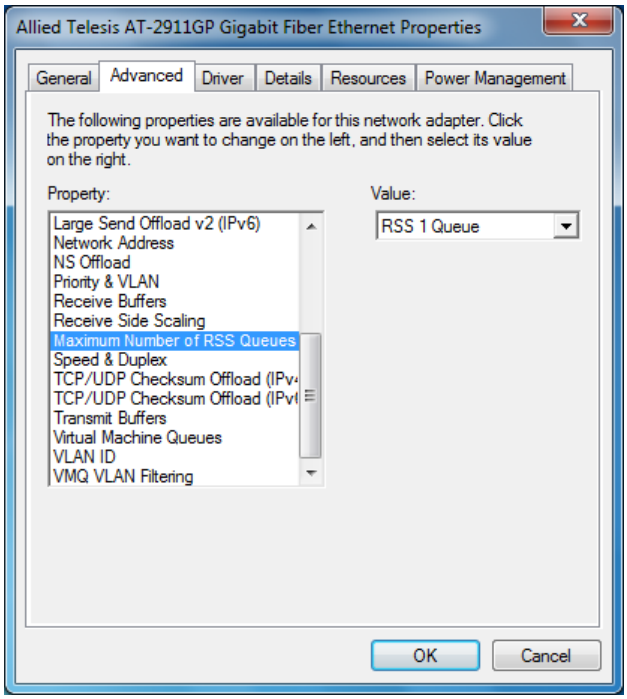


Figure 78. Maximum Number of RSS Queues Page

3. Select one of the following options:

   - **RSS 1 Queue —** The system allocates one RSS queue. This is the default setting.
   - **RSS 2 Queues —** The system allocates two RSS queues.
   - **RSS 4 Queues —** The system allocates four RSS queues.

4. Click **OK**.

RSS Queues

The RSS Queues feature allocates queue space between the adapter port and processor, and allows you to specify the number of RSS queues that the adapter assigns receiving data to.

To Specify the RSS Queues value, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **RSS Queues** in the Property box.

   The RSS Queues page is displayed as shown in Figure 79.

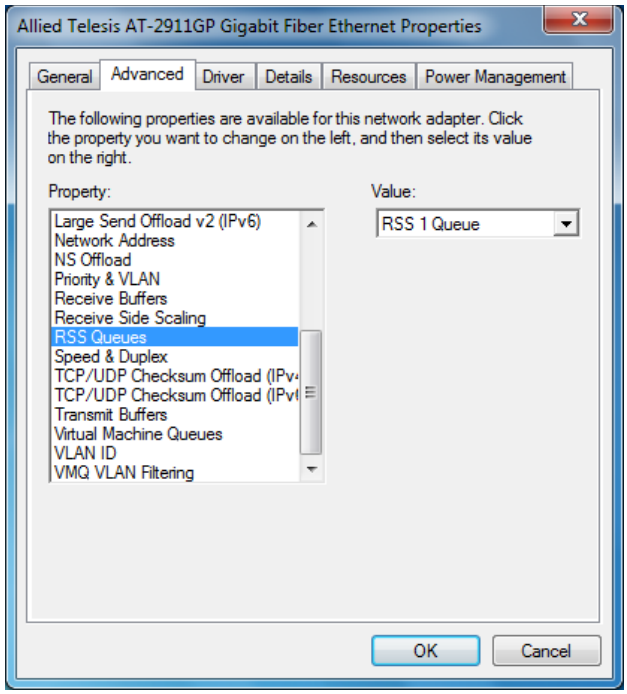


Figure 79. RSS Queues Page

3. Select one of the following options:

   - **RSS 1 Queue —** The system allocates one RSS queue. This is the default setting.
   - **RSS 2 Queues —** The system allocates two RSS queues.
   - **RSS 4 Queues —** The system allocates four RSS queues.

4. Click **OK**.

Speed & Duplex

The Speed & Duplex property sets the link speed and duplex mode for the copper port. For the fiber port, Auto or Auto Negotiation is specified.

To change the Speed & Duplex property, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Speed & Duplex** in the Property box.

   The Speed & Duplex page is displayed as shown in Figure 80.

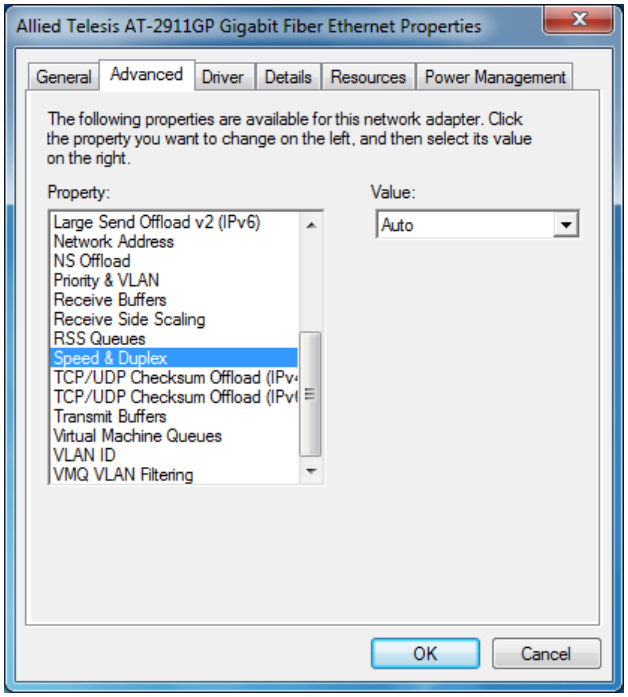


Figure 80. Speed & Duplex Page

3. Select one of the following options:

   - **Auto** or **Auto Negotiation —** The speed and duplex mode are automatically negotiated. This is the default setting.
   - **100Mb Half Duplex —** Available only for the copper port.
   - **100Mb Full Duplex —** Available only for the copper port.
   - **10Mb Half Duplex —** Available only for the copper port.
   - **10Mb Full Duplex —** Available only for the copper port.

4. Click **OK**.

TCP/UDP Checksum Offload (IPv4)

The TCP/UDP Checksum Offload (IPv4) function enables the adapter port to compute the checksum of transmitting IPv4 packets and verify the checksum of receiving IPv4 packets, taking load off from the CPU.

To modify the TCP/UDP Checksum Offload (IPv4) setting, do the following:

1. Access the Device Manager on your operating system.

   See "Accessing Advanced Properties" on page 87.

2. Select **TCP/UDP Checksum Offload (IPv4)** in the Property box.

   The TCP/UDP Checksum Offload (IPv4) page is displayed as shown in Figure 81.

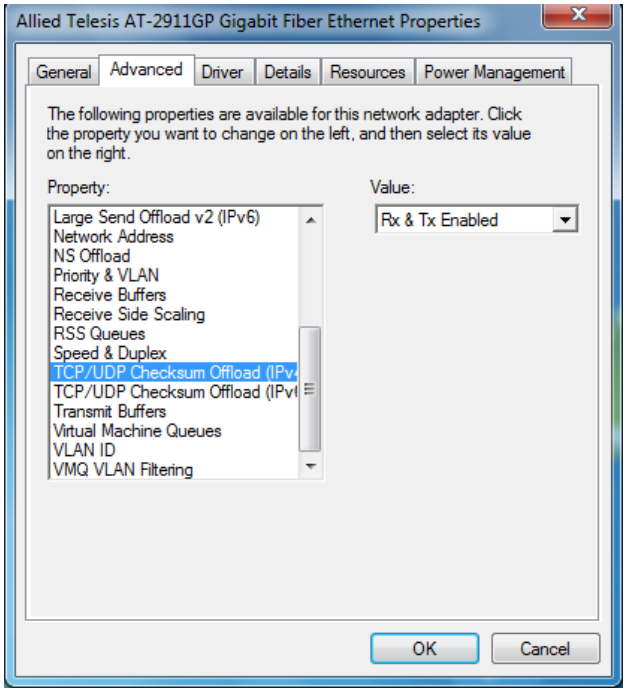


Figure 81. TCP/UDP Checksum Offload (IPv4) Page

3. Select one of the following options:

   - **Rx & Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function for both receiving and transmitting IPv4 packets. This is the default setting.
   - **Disabled —** Disables the TCP/UDP Checksum Offload (IPv4) function for both receiving and transmitting.
   - **Rx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function only for receiving IPv4 packets.
   - **Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv4) function only for transmitting IPv4 packets.

4. Click **OK**.

TCP/UDP Checksum Offload (IPv6)

The TCP/UDP Checksum Offload (IPv6) function enables the adapter port to compute the checksum of transmitting IPv6 packets and verify the checksum of receiving IPv6 packets, taking load off from the CPU.

To enable or disable the TCP/UDP Checksum Offload (IPv6) feature, do the following:

1. Access the Device Manager on your operating system.

   See "Accessing Advanced Properties" on page 87.

2. Select **TCP/UDP Checksum Offload (IPv6)** in the Property box.

   The TCP/UDP Checksum Offload (IPv6) page is displayed as shown in Figure 82.

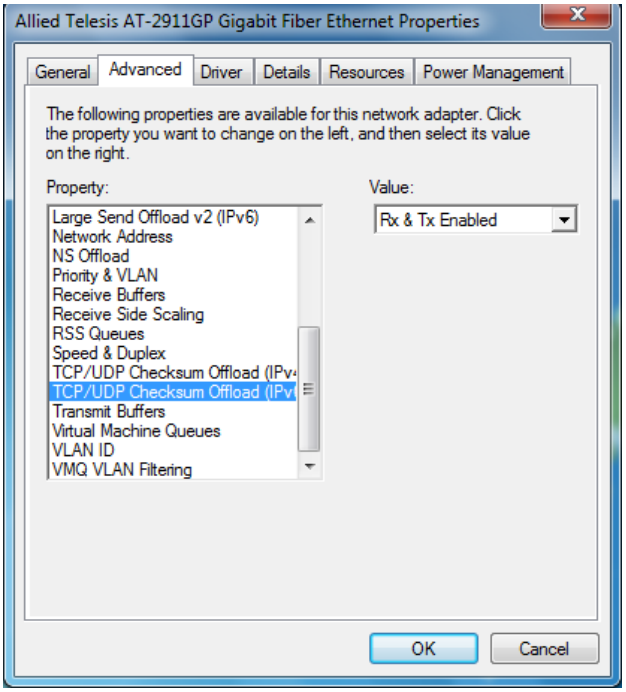


Figure 82. TCP/UDP Checksum Offload (IPv6) Page

3. Select one of the following options:

   - **Rx & Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function for both receiving and transmitting IPv6 packets. This is the default setting.
   - **Disabled —** Disables the TCP/UDP Checksum Offload (IPv6) function for both receiving and transmitting.
   - **Rx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function only for receiving IPv6 packets.
   - **Tx Enabled —** Enables the TCP/UDP Checksum Offload (IPv6) function only for transmitting IPv6 packets.

4. Click **OK**.

Transmit Buffers

The Transmit Buffers property specifies the number of packet transmit buffers allocated for the adapter port.

To change the Transmit Buffers value, do the following:

1. Access the Device Manager on your operating system.

   See "Accessing Advanced Properties" on page 87.

2. Select **Transmit Buffers** in the Property box.

   The Transmit Buffers page is displayed as shown in Figure 83.

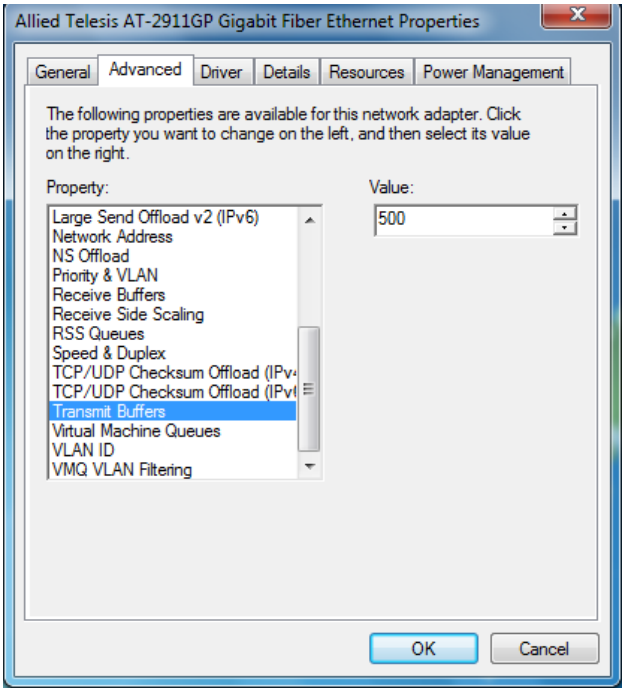


Figure 83. Transmit Buffers Page

3. Specify the number of transmit buffers that you want the system allocates.

   The range of the value is from 100 to 600. The default value is 500.

4. Click **OK**.

Virtual Machine Queues

The Virtual Machine Queues feature allows the adapter port to create virtual network queues to reduce network traffic.

To enable or disable the Virtual Machine Queues feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Virtual Machine Queues** in the Property box.

   The Virtual Machine Queues page is displayed as shown in Figure 84.

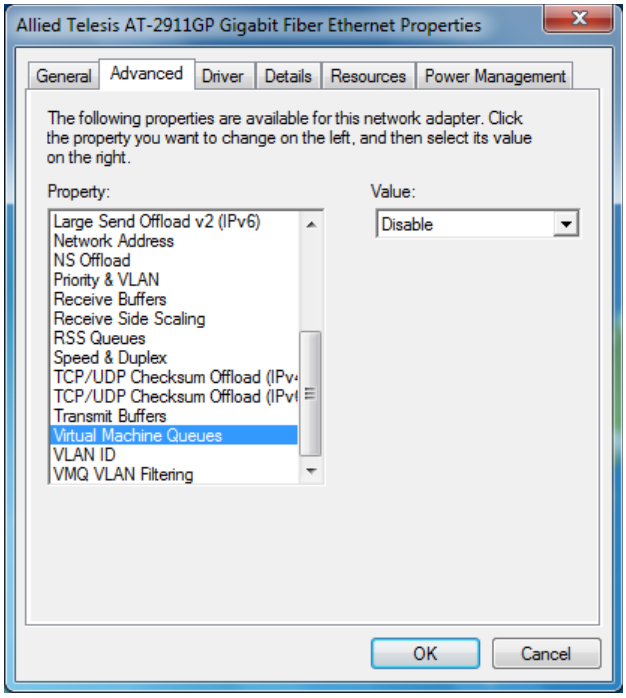


Figure 84. Virtual Machine Queues Page

3. Select one of the following options:

   - **Enable —** The Virtual Machine Queues feature is enabled.
   - **Disable —** The Virtual Machine Queues feature is disabled. This is the default setting.

4. Click **OK**.

VLAN ID

The VLAN ID property allows you to specify a VLAN ID on your network to the adapter port. The adapter port adds the value of the VLAN ID to a frame in the VLAN tag before transmitting the frame.

> **Note**
> When you install the AT-MUX utility on your system to bridge frames from the copper port to the fiber port, set a VLAN ID in the AT-MUX utility. See "Accessing the AT-MUX Utility" on page 69.

To change the VLAN ID value, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **VLAN ID** in the Property box.

   The VLAN ID page is displayed as shown in Figure 85.

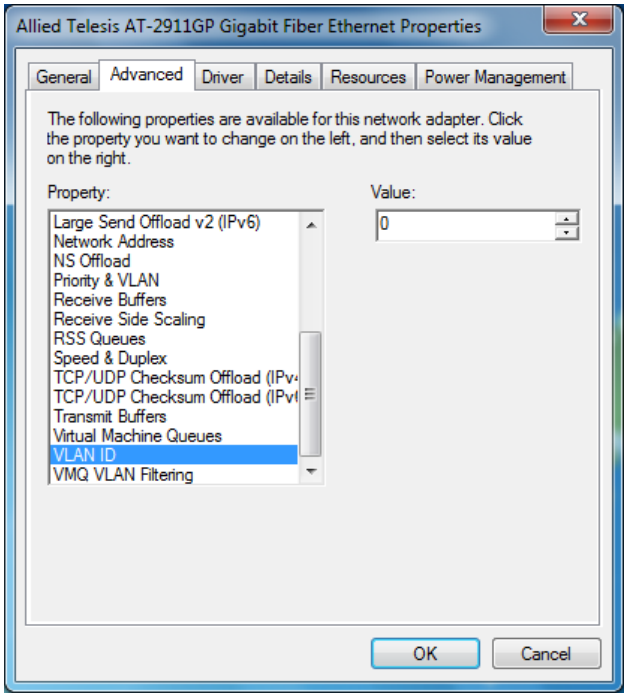


Figure 85. VLAN ID Page

3. Specify a VLAN ID in the Value box.

   The range of the value is from 0 to 4094. The default value is 0.

4. Click **OK**.

VMQ VLAN Filtering

The VMQ VLAN Filtering feature allows the adapter port to filter data packets using the VLAN ID in the media access control (MAC) header to improve networking performance and reduce CPU utilization. To make the VMQ VLAN Filtering feature effective, the host computer must be set in virtual environment.

To enable or disable the VMQ VLAN Filtering feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **VMQ VLAN Filtering** in the Property box.

   The VMQ VLAN Filtering page is displayed as shown in Figure 86.

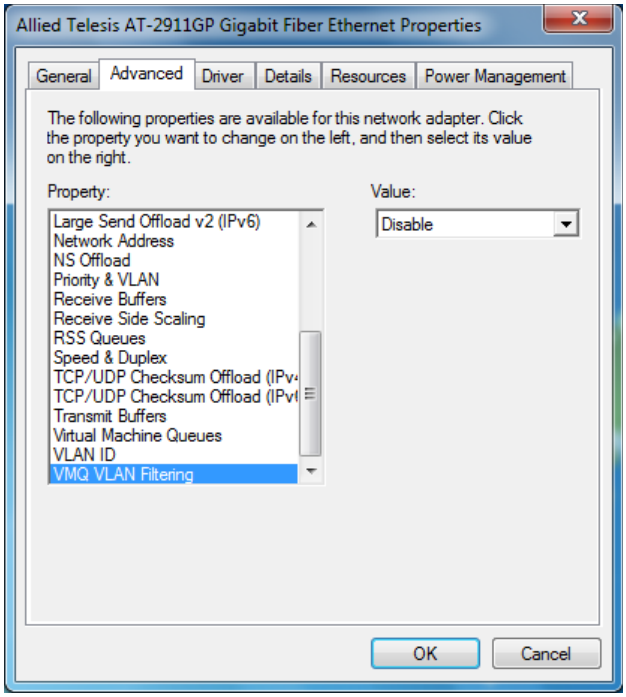


Figure 86. VMQ VLAN Filtering Page

3. Select one of the following options:

   - **Enable —** The VMQ VLAN Filtering feature is enabled. This is the default setting.
   - **Disable —** The adapter port filters data packets using the VLAN ID in the MAC header.

4. Click **OK**.

Wake Up Capabilities

The Wake Up Capabilities feature enables the adapter to wake up from a low-power mode when the adapter port receives a network wake-up data unit. Two types of wake-up data units can be accepted: Magic packet and Wake Up frame.

To change the Wake Up Capabilities property, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Wake Up Capabilities** in the Property box.

   The Wake Up Capabilities page is displayed as shown in Figure 87.

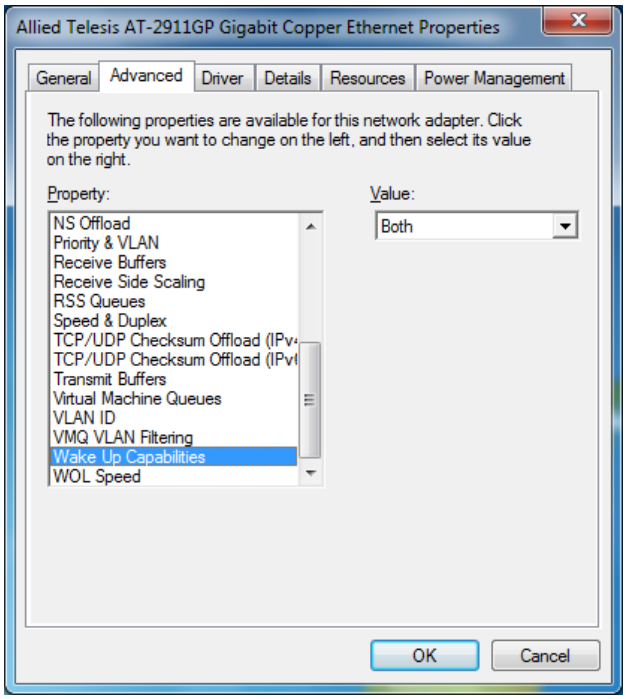


Figure 87. Wake Up Capabilities Page

3. Select one of the following options if available:

   Note
   The options and default setting depend on your operating system and the version of the driver that you installed.

   - **Both —** The adapter wakes up from a low-power mode when receiving a Magic packet or Wake Up frame. This is the default setting.

- **Magic Packet —** The adapter wakes up from a low-power mode when receiving a Magic packet.
- **None —** The adapter stays in a low-power mode.
- **Wake Up Frame —** The adapter wakes up from a low-power mode when receiving a Wake Up frame.

4. Click **OK**.

Wake on Magic Packet

The Wake on Magic Packet feature enables the adapter to wake up from a low-power mode when the adapter port receives a Magic packet.

To enable or disable the Wake on Magic Packet feature, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **Wake on Magic Packet** in the Property box.

   The Wake on Magic Packet page is displayed as shown in Figure 88.

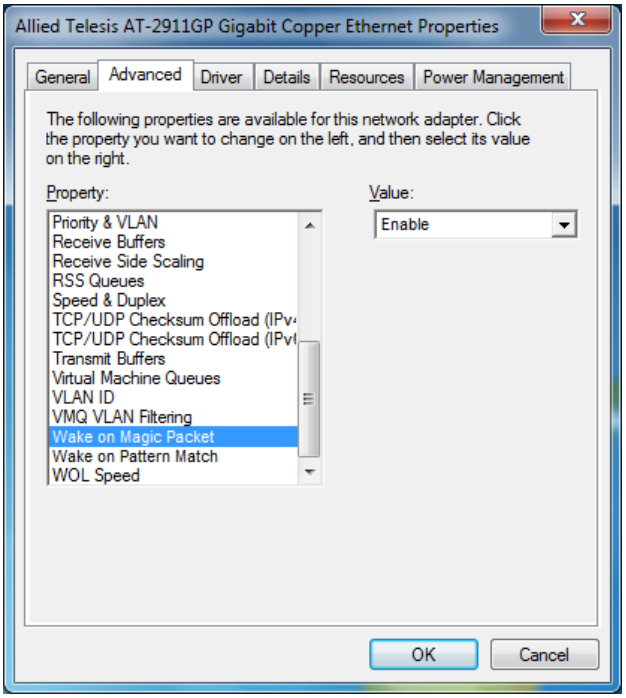


Figure 88. Wake on Magic Packet Page

3. Select one of the following options:

   - **Enable —** The adapter wakes up from a low-power mode when receiving a Magic Packet. This is the default setting.
   - **Disable —** The adapter stays in a low-power mode when receiving a Magic Packet.

4. Click **OK**.

Wake on Pattern Match

The Wake on Pattern Match feature enables the network adapter to wake up from a low-power mode when the packet matches the wake patterns specified in the operating system.

To enable of disable the Wake on Pattern Match feature, do the following:

1. Access the Advanced Properties.

   See “Accessing Advanced Properties” on page 87.

2. Select **Wake on Pattern Match** in the Property box.

   The Wake on Pattern Match page is displayed as shown in Figure 89.

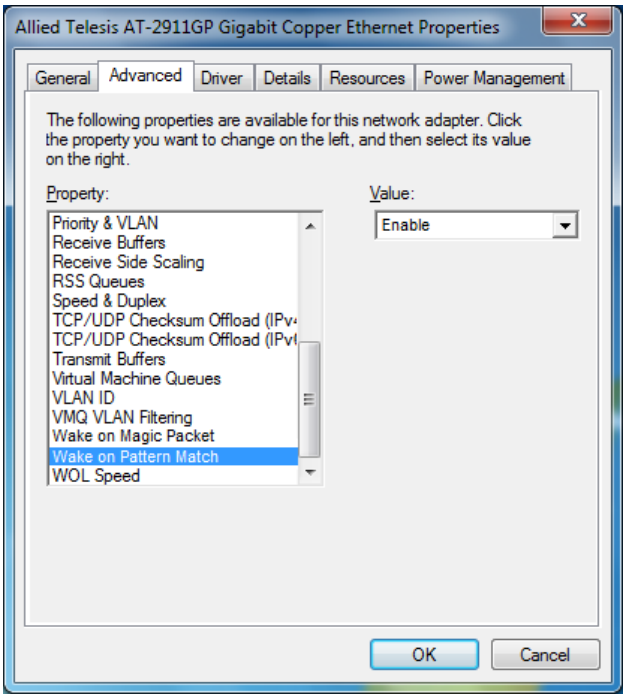


Figure 89. Wake on Pattern Match Page

3. Select one of the following options:

   - **Enable —** The adapter wakes up from a low-power mode when receiving a packet that matches one of the patterns specified in the operating system.
   - **Disable —** The adapter stays in a low-power mode.

4. Click **OK**.

WOL Speed

The WOL Speed property allows you to specify the speed of Wake-on-LAN on your adapter port.

To view this setting, do the following:

1. Access the Advanced Properties.

   See "Accessing Advanced Properties" on page 87.

2. Select **WOL Speed** in the Property box.

   The WOL Speed page is displayed as shown in Figure 90.

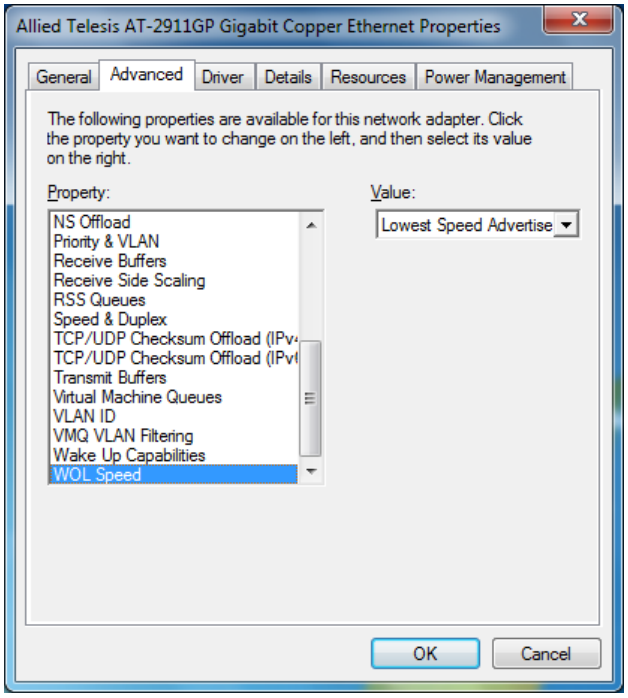


Figure 90. WOL Speed Page

3. Select one of the following options:

   - **10 Mb —** The speed of Wake-on-LAN is 10 Mbps.
   - **100 Mb —** The speed of Wake-on-LAN is 10 Mbps.
   - **Auto —** The speed of Wake-on-LAN is auto negotiated.
   - **Lowest Speed Advertised —** This is the default setting.

4. Click **OK**.

Chapter 7

Uninstalling the Driver Software

This chapter describes how to uninstall the driver software for the AT-2911GP adapter card.

This chapter contains the following topics:

- “Overview” on page 134
- “Uninstalling the Driver Software Using Device Manager” on page 135
- “Uninstalling the Driver Software Silently” on page 137

Overview

When you no longer use the AT-2911GP adapter card for your computer, you may want to uninstall the driver software from your operating system.

As you can install driver software for the AT-2911GP adapter card using Device Manager or the silent installation method, you can also uninstall driver software in two ways:

- ❒ "Uninstalling the Driver Software Using Device Manager" on page 135
- ❒ "Uninstalling the Driver Software Silently" on page 137

Guidelines

Here are the guidelines for uninstalling the driver software from your system:

- ❒ You must have Administrator privileges to remove the driver software.
- ❒ Before uninstalling the adapter, capture all of the Advanced Property settings for later use. The properties are lost during the uninstall process.

Uninstalling the Driver Software Using Device Manager

To uninstall the driver software from your operating system, do the following:

1. Start your Windows operating system and log in.
2. Access the Device Manager.

   See “Accessing the Device Manager” on page 39.
3. In the Device Manager window, expand the Network Adapters folder.
4. Right-click one of **Allied Telesis AT-2911GP Ethernet** entries.

   The shortcut menu appears as shown in Figure 91.

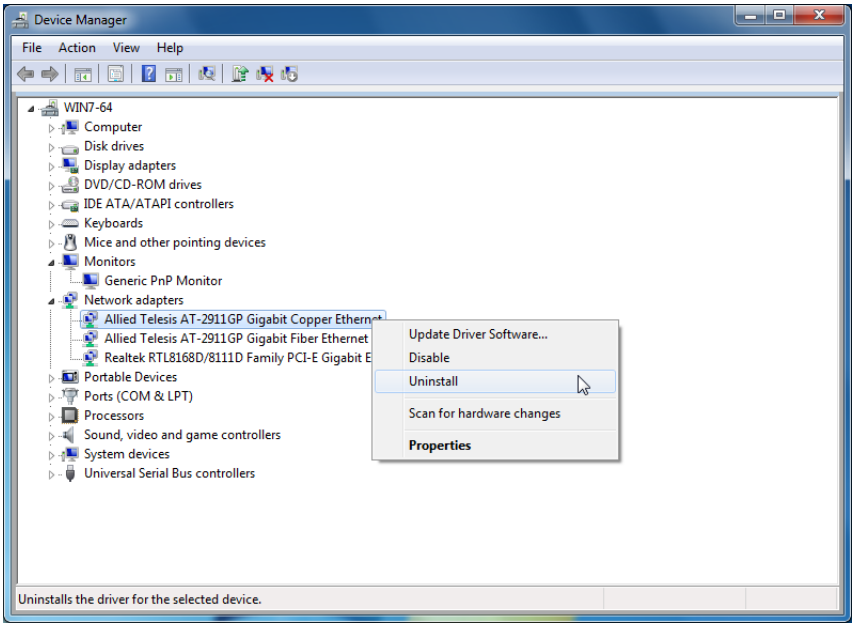


Figure 91. Device Uninstall Window

5. Select **Uninstall**.

   The Confirm Device Uninstall window pops up.
6. Check the check box if you want to remove the driver software for your adapter.

> **Note**
> The option to remove the driver is not available in Windows XP and Windows Server 2003.

7. Click **OK** to complete the uninstall.
8. Repeat step 4 to step 7 on the other **Allied Telesis AT-2911GP Ethernet** entry.

Uninstalling the Driver Software Silently

You can apply the silent installation method to uninstall the driver.

Uninstall the driver without user-intervention, perform the following steps:

1. Open a command prompt window with administrator privileges.
2. Change the directory to the folder where the `dpinst` utility and the driver files reside.
3. Uninstall the driver silently by executing the following command:

   ```
   > dpinst /U inf_file_name.inf /S
   ```

   Note
   Replace *inf_file_name* with the name of `.inf` file.

   The driver is uninstalled without user-intervention.

Chapter 8

Troubleshooting

This chapter describes troubleshooting procedures. It contains the following sections:

- “Checking the Port LED on the Adapter” on page 140
- “Troubleshooting Checklist” on page 141
- “Testing Network Connectivity” on page 142

Checking the Port LED on the Adapter

The AT-2911GP adapter card comes with two LED's. One LED indicates the link status for the copper port; the other indicates the link status for the fiber optic port.

Note
Before the port LED can provide troubleshooting information, the driver software for your particular operating system must be installed and the adapter must be connected to the network. See Chapter 3, "Installing the Driver Software" on page 35.

Table 8 describes the link status that LED's indicate.

Table 8. LED Status

State	Description
On	Valid link.
Off	No link.
Flashing	The port is receiving or transmitting network packets

Troubleshooting Checklist

The following checklist provides recommended actions to take to resolve problems installing the AT-2911GP adapter card or running it in your system.

Warning
Before opening the cabinet of your system for removing or inserting the adapter card, review all precautions outlined under “Reviewing Safety Precautions” on page 25.

- ❒ Inspect all cables and connections. Verify that the cable connections between the adapter and the switch are attached properly. Make sure that the cable length and rating are compliant with the requirements listed in “Connecting the Network Cables” on page 34."
- ❒ Check the adapter installation by reviewing Chapter 2, “Installing the Hardware” on page 23.
- ❒ Make sure that the adapter card is properly seated in a PCIe slot. Check for specific hardware problems, such as obvious damage to board components or the PCIe edge connector.
- ❒ Check the configuration settings and change them if they are in conflict with another device.
- ❒ Make sure that your system is using the latest BIOS.
- ❒ Try inserting the adapter card in another slot. If the new position works, the original slot in your system may be defective.
- ❒ Replace the failed adapter card with one that is known to work properly. If the second adapter card works in the slot where the first one failed, the original adapter card is probably defective.
- ❒ Install the adapter card in another functioning system and run the tests again. If the adapter card passed the tests in the new system, the original system may be defective.
- ❒ Remove all other adapter cards from the system and run the tests again. If the adapter card passes the tests, the other adapter cards may be causing contention.

Testing Network Connectivity

This section describes how to test network connectivity for Windows and Linux networks.

Note
When you are using the fiber optic port, both the adapter and the switch must be set to the same speed and duplex mode. When you are using the copper port, set both the adapter and switch to Auto-Negotiation or the same speed and duplex mode.

Windows

To test the network connectivity for the Windows driver software, perform the following procedure.

Use the ping command to determine if network connectivity is working.

1. Select **Run** from the Windows Control Panel

   The Run command window opens, as shown in Figure 92.

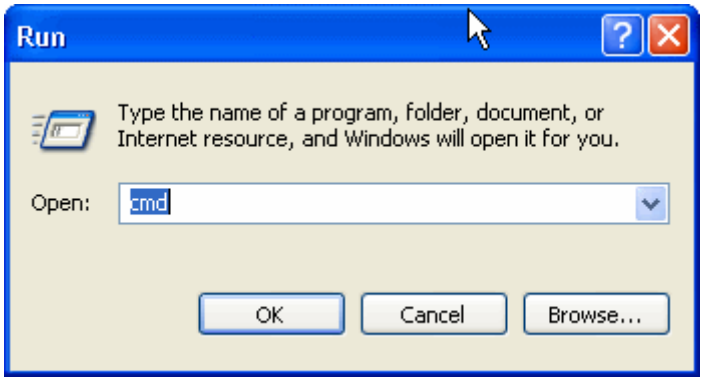


Figure 92. Run Command Window

2. Type **cmd** and click **OK**.
3. Type **ipconfig /all**

   The command window opens, as shown in Figure 93 on page 143.

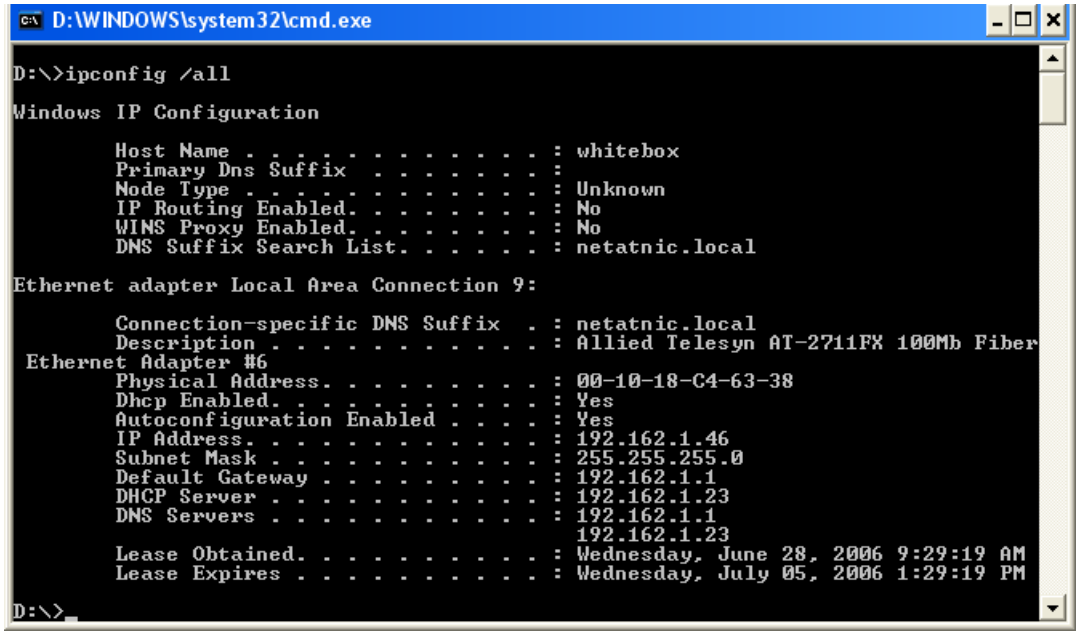


Figure 93. Command Window with ipconfig/all displayed

4. Type **ping <IP address>** from the command line, then press **Enter**.

   The network connectivity information is displayed, as shown in Figure 94.

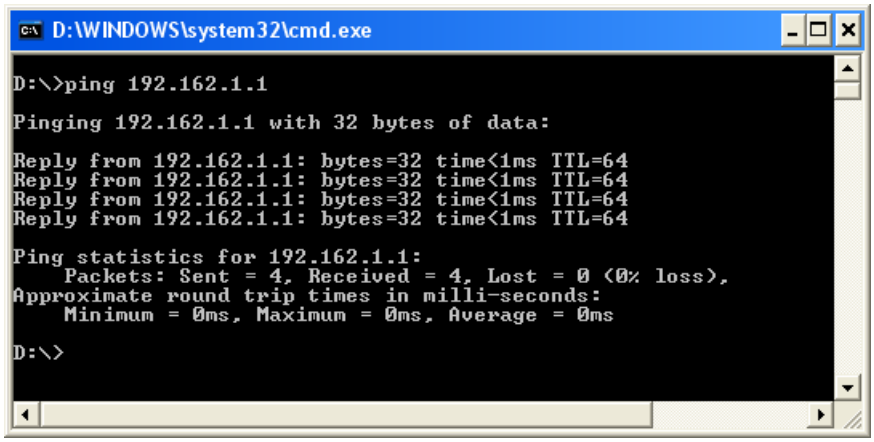


Figure 94. Command Window with ping displayed

Linux To verify that the Ethernet interface is up and running, run '`ifconfig`' to check the status of the Ethernet interface. In addition, you can use the '`netstat -i`' command to check the statistics on the Ethernet interface. Consult the manual pages for more information about the '`ifconfig`' and '`netstat`' commands.

To ping an IP host on the network to verify connection has been established, perform the following procedure.

1. From the command line, type **ping <IP address>**.
2. Press **Enter**.

   The command displays the packet send/receive status.

Appendix A

Specifications

Physical Specifications

Dimensions:	14.09 cm x 5.6cm (5.5 in. x 2.2 in.)
Weight:	68 g (2.4 oz)

Environmental Specifications

Operating Temperature:	0°C to 40°C (32°F to 104°F)
Storage Temperature:	-25°C to 70°C (-°13F to 158°F)
Relative Humidity:	5% to 90% (non-condensing)

Power Specifications

Signaling Voltage:	3.3 V
Power Consumption:	2.5 Watts (average) without PoE

Optical Specifications

SX	Output Optical Power:	-9.5 (Min)	-4 (Max) dBM
	Optical Sensitivity:	-19 (Typ)	-17 (Max) dBM
	Center Wavelength	850 nm	
LX	Output Optical Power:	-9 (Min)	-3 (Max) dBM
	Optical Sensitivity:	-20 (Typ)	-19 (Max) dBM
	Center Wavelength	1310 nm	

Appendix B
Cleaning Fiber Optic Connectors

This appendix provides how to clean fiber optic connectors and consists of the following sections:

- ❒ “Overview” on page 148
- ❒ “Cleaning Using a Cartridge-Type Cleaner” on page 149
- ❒ “Cleaning Using a Swab” on page 151

Overview

The fiber optic connector consists of a fiber optic plug and its adapter. The end of the fiber optic cable is held in the core of the ferrule in the plug as shown in Figure 95. Light signals are transmitted through the core of the fiber.

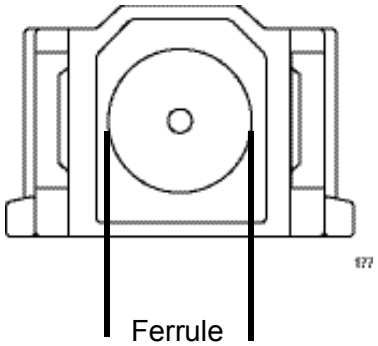


Figure 95. Ferrule in an SC Connector Plug

Even minor smudges or dirt on the end face of the fiber, completely invisible to the naked eye, can disrupt light transmission and lead to failure of the component or of the entire system. Figure 96 shows part of the end face of an unclean and clean ferrule.

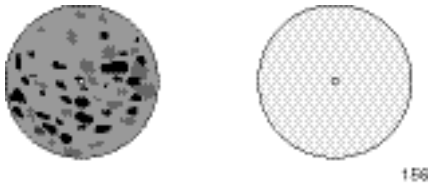


Figure 96. Unclean and Clean Ferrule

Guidelines

Here are general guidelines and warnings for fiber optic connectors:

- Always keep a dust cap on a fiber optic cable when it is not in use.
- Do not touch the end face of the ferrule in the connector.

Warning
Do not stare into the laser beam. 2

Warning
Do not look directly at the cable ends or inspect the cable ends with an optical lens. 31

Cleaning Using a Cartridge-Type Cleaner

Fiber optic cartridge cleaners are available from many vendors and are typically called “cartridge cleaners,” as shown in Figure 97.

Figure 97. Cartridge Cleaner

Note
Do not use compressed air or aerosol air to clean a fiber optic connector.

To clean a fiber optic connector using a cartridge cleaner, perform the following procedure:

1. With one hand, hold the cartridge cleaner and push the lever on the cleaning cartridge in the direction of the arrow to expose the cleaning surface, as shown in Figure 98.

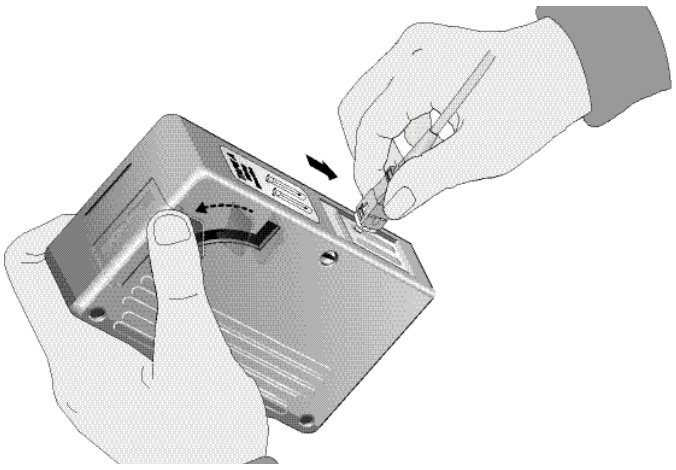


Figure 98. Rubbing the Ferrule Tip on the Cleaning Surface

2. Place the ferrule tip on the exposed cleaning surface and rub the ferrule in a downward direction, as shown in Figure 98.

Note
Rub the ferrule tip on the cleaning surface in one direction only.

3. When you reach the end of the cleaning surface, pick up the ferrule tip, rotate and place it at the top and rub downwards at least 2 times.

Caution
Failing to pick up the ferrule tip when you reach the bottom of the cleaning surface can result in static electricity that can damage the fiber optic cable.

4. If desired, repeat steps 2 and 3.
5. If a fiber inspection scope is available, use the scope to inspect the ferrule end face to make sure that it is clean.
6. Reconnect the cable to the port or protect the ferrule tip with a dust cap.

Cleaning Using a Swab

Specially treated swabs (stick cleaners) are available for cleaning inside connector adapters or hard-to-reach ferrule tips. These swabs, often referred to as “lint free” or “alcohol free” swabs, are available from many vendors. See Figure 99. Stick cleaners are available in both 2.5 mm and 1.25 mm sizes for use on SC and MU connectors respectively.

Note
NEVER use a household cotton swab and/or alcohol to clean a fiber optic connector. A cotton swab or alcohol may leave a residue on the ferrule tip.

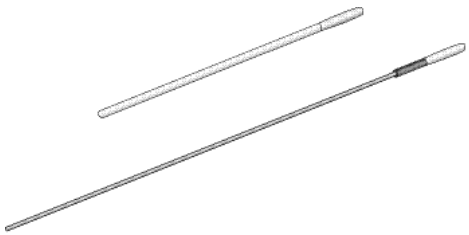


Figure 99. Lint-Free and Alcohol-Free Swabs

Note
Do not use compressed air or aerosol air to clean a fiber optic connector.

To clean a recessed ferrule using a swab, perform the following procedure:

1. Insert the swab into the adapter as shown in Figure 100 and rub the ferrule tip with the swab.

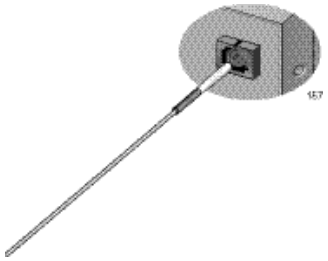


Figure 100. Cleaning a Recessed Ferrule

2. If desired, repeat step 1.

3. If a fiber inspection scope is available, use the scope to inspect the connector to make sure that it is clean.
4. Reconnect the cable to the port or protect the ferrule tip with a dust cap.